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EDITORIAL

Railway Age

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A train dispatcher, in a laudable endeavor to avoid delay, recently instructed an operator *by message* (which was un-

Save Minutes Safely

warranted by rule or practice) to change a "31" train order to a "19" order. A head-on collision in which two employees were killed and four passengers and two employees were injured was the result. This was the toll paid in an effort to save a few minutes' delay to an extra train. If others learn a lesson from this accident it may be worth the price. This dispatcher, in an effort to be a "Hundred Point" man, defined by Elbert Hubbard as "one who is true to every trust," attempted to save minutes—but not safely. It was the desire of the railroad that trains should be moved with dispatch, but still there was no adequate block system in operation. Such a system would have acted as a check against errors. The moral is obvious. The time is approaching when progressive managements, in an effort to provide a "Hundred Point" system as well as "Hundred Point" men, will operate their trains by an adequate block system, without train orders and—save minutes safely.

One of the most serious handicaps under which the maintenance of way department has labored from time immemorial has been the practice of deferring the

Maintenance Work inauguration of its program of seasonal work until the spring is far advanced.

Should Be Pushed

For many years the termination of the fiscal year on July 1 caused many roads to postpone heavy expenditures until after that date. With the changing of the fiscal year to conform to the calendar year several years ago this incentive for delaying the work was removed, but the habit of long standing was hard to break and some roads have still continued it. While the large expenditures which have been authorized in recent weeks for new equipment and for improvements to the physical property indicate the railway managements are facing the future with more optimism than in recent years, there has still been a tendency to delay routine maintenance work to such an extent that prompt action is now necessary. The reduction in the wages of maintenance of way employees announced last week and effective July 1, is estimated to reduce the cost of labor approximately 13 per cent, and will naturally stimulate activity. The elimination of penalty overtime for the ninth and tenth hours a year ago offers an incentive for the return to the ten-hour day where this has not already been done. There are increasingly numerous indications that the roads will soon face a labor shortage, for it is already being felt in the industrial centers. With the harvest season approaching it is to be expected that heavy inroads will be made upon the track forces in the agricultural areas. In view of the impending shortage of labor and because of the outlook for steadily increasing traffic with the correspondingly heavier demands upon the track and structures, it is important that the roads organize at once to get as much of their season's work done as possible while a sufficient number of men are still available. Prompt action is necessary if the maximum and most economical results are to be secured.

We have received from the traffic department of the Lehigh & New England an attractive little booklet called "Locating

"Locating the Factory"

the Factory." This pamphlet is not advertising matter in the ordinary sense; it is not devoted to singing the praises of plant sites along the lines of the Lehigh & New England. Instead it is a rather thorough study of the various angles of the problem of factory location and is filled with sound theory and practical suggestions. The concluding chapter of the book is devoted to a free offer of expert advice and assistance to manufacturers who are seeking favorable locations for their plants. The mere fact that the Lehigh & New England has issued such a booklet is not the most interesting point, however; the company is securing distribution for it by advertising in industrial papers. We have not had any figures on the number of inquiries there have been for this book to date, but it seems reasonable to suppose that there will be a heavy demand for it which should lead to many requests for direct personal assistance by the railroad's traffic officers. The results should be beneficial to all concerned—the railroad, the manufacturer, and the cities selected for industrial development. The Lehigh & New England is to be congratulated not only for having issued such a commendable book, but for advertising it and for offering expert advice to those who seek it.

Five members of the New York Central's police department at Buffalo, N. Y., were recently convicted in that city of

Corrupt Railroad Police

the stealing of contents from their company's freight cars. One of these men carried the title of police inspector, and another that of captain, supposedly responsible and executive positions. These two men were given sentences of 10 years each, while their three accomplices received prison terms ranging from two to seven years. From the evidence uncovered at the trial it was learned that a car burglarizing gang had been operating in the New York Central's freight yards for some time under the protection and direction of its "railroad police leaders." This was the second of two groups to be tried and convicted within the last month on a charge of stealing from the New York Central's freight cars and it is also probable that other members of the department who have been indicted will soon be convicted. It is unfortunate that such a condition should exist and it causes one to wonder if it is prevalent within railroad organizations. Such exhibitions of flagrant disloyalty are sometimes hard to believe, but this recent escapade should serve as a warning. Car robberies, a wasteful and extravagant cause of loss of revenue which claim an annual toll of millions of dollars, should and must be curbed. Assuming that the New York Central's case is not unusual, it would seem that the remedy for this difficulty lies in the selection of the proper personnel for a railroad police department, for the situation mentioned above could not have developed if the same type of men had been in charge of police protection as are selected for executive positions in the operating, traffic or engineering departments. The chiefs of police,

chief special agents or superintendents of police, as they are usually called, are directly responsible for the administration of that department and their position is, or should be one of importance requiring the services of first-class men. It is not always necessary for a carrier to secure men for this position from outside sources, for there are men in railroad service who have had years of experience in railroad police protection work, in both legal and field practice, and who are able to organize and maintain a police department of efficient, honest men. The extensive powers of patronage accompanying a position of this kind make it an absolute necessity that it should be held by one who will be most discriminating in the choice of subordinate officers, who in turn will be equally careful in picking their men. Unfortunately, the class of men seeking employment of this nature is frequently not the best. Therefore, unless stringent precautions are exercised in selection, trouble will follow. Judge Howe, in sentencing the guilty New York Central police officers, stated: "I firmly believe the New York Central Railroad Company would suffer fewer losses if it would discharge its entire police department." A rather broad statement, but nearly true, as a partially efficient and somewhat dishonest police department could hardly be called a protective body. The best insurance against this evil is the maintenance of close supervision over the department and careful selection of the personnel, from chief on down.

Reductions of Wages and Strike Talk

THERE IS WIDESPREAD talk of a strike because of the recent decisions of the Railroad Labor Board authorizing reductions in wages of maintenance of way and shop employees on July 1. This talk is accompanied by statements regarding the effect of the decisions which, if allowed to go unchallenged, will mislead the public. Some of these statements are based upon data presented by the labor members of the board in their minority opinions.

The majority members of the board in making the award in the maintenance of way employees' case expressed the opinion that "after the reductions made under this decision common labor on the railroads will still be receiving as a rule a wage in excess of that paid to similar labor in other industries and that the same will be true of all other classes of labor covered by this decision." They said practically the same thing regarding the new wages fixed for shop employees. They believed, however, that the conditions of railway employment justified the payment of higher wages to railway employees than to men in other industries. The average hourly rate of common labor which will be paid under the award after July 1 will be 32.7 cents an hour. This represents an increase of 69.4 per cent over the average hourly wage in effect in December, 1917. The difference between the cost of living in December, 1917, and March, 1920, was 17.2 per cent. Therefore the majority estimated "the increase in purchasing power of earnings under the present decision as compared with December, 1917," as 44.5 per cent. Computing in the same way they estimated the purchasing power of the new wages of the machinists will be 19 per cent and those of carmen 46 per cent greater than in December, 1917.

The labor members challenged this conclusion in both cases. In their dissenting opinion in the maintenance of way case they said that eight hours has been established as the basic day. The average daily earnings of maintenance of way employees in December, 1917, were \$1.93. On an eight-hour basis the average daily earnings under the new wages would be \$2.62. Therefore, the minority argued, this showed a wage increase amounting to only 35.8 per cent. This would make the purchasing power of the new wages only 16 per cent more than in 1917.

Of course this is based on the assumption that the employees will work only eight hours. But the board has authorized the railways to pay common labor the same wages in the ninth and tenth hours as in the first eight. When conditions justify it the railways will employ the men ten hours a day if they are willing to work that much. In many cases this is being done already. On the ten-hour basis a wage of 32.7 cents per hour would, of course, yield daily earnings of \$3.27, or, as the majority of the board said, 69.4 per cent more than an employee could earn in ten hours at the average wage of December, 1917.

If the employees refuse to work ten hours, why will they do so? Because they value two hours of leisure more than they do two hours' pay. But if they decide that eight hours' work for \$2.62 and two hours' leisure is worth more to them than ten hours' work for \$3.27, how can they justly complain if they do not get the 69.4 per cent higher earnings than in 1917 which they could get by working ten hours? The minority members of the board argued that a reduction of hours should not be counted as an increase in pay. But if two hours' leisure is worth more than two hours' pay, why should a man complain because he gets the two hours of leisure instead of the two hours' pay? Of course, if the additional work would be injurious to the employee the case would be different, but maintenance of way work on railroads is not arduous or unhealthful work. On every farm by a railway right of way men work more hours than this.

The minority members of the board also say that in determining the relative purchasing power of the new wages, the board should have gone back to 1915. They figure that a ten-hour day in 1915 yielded earnings of \$1.50, while an eight-hour day after July 1 will mean earnings of \$2.62, or an increase in money wages of 74.4 per cent. The cost of living is approximately 60.5 per cent more than in 1915. Therefore as compared with 1915, the wages of these men after July 1, they conclude, will show an increase of only 8.7 per cent. But if the men work ten hours a day their earnings will be 118 per cent greater than in 1915, and the purchasing power of the wages not 8.7 per cent, but 36.5 per cent, more than in 1915.

The main ground upon which the labor members attack the decisions in which the public and railway members have joined, however, is that the earnings which the employees involved can make under the new wages will be insufficient to enable them to maintain an "average American family of five" according to a reasonable standard of living. It cannot be denied that railway employees can earn more under the new scales fixed than is earned by most employees in other industries doing similar work. It cannot be denied that railway employees, by working the same number of hours as in 1917, can under the new scales make earnings which will buy them much more food, clothing and other necessities and comforts than they could buy with the wages they received five years ago. In fact, the earnings of most of them, even though they work only eight hours a day, will have substantially greater purchasing power than the earnings they made five years ago while working ten hours a day. Now, the Transportation Act specifically makes the wages paid in other industries and the cost of living the two principal standards for determining the reasonableness of railway wages. It has always been assumed that if the wages fixed will yield the employees earnings having greater purchasing power than their earnings before government regulation of wages began, the board would have given the consideration to the cost of living which the law requires.

The labor members reject this view. The cost of living which the board should consider, they contend, is the amount which will enable a railway employee to maintain a family of five according to what they call a "minimum decency standard." The average earnings required to maintain this standard according to evidence introduced by representatives

of the labor unions is \$2,637 a year, and the labor members virtually take the position that this is the cost of living which the board should adopt in applying the cost of living measure to wages.

It is easily demonstrated that industry in general, including the railroads, could not under present conditions pay this high an average wage without being speedily bankrupted. The wages of industry annually would then greatly exceed the largest total production of the country in any past year. Since industry in general could not afford to pay this average wage it necessarily follows that if it were paid to railway employees they would be favored far above any other class of workers. The railways would have to charge much higher rates than at present which means, of course, that the high wages of railway employees would be paid at the expense of other workers who are receiving much lower wages.

No intelligent or humane person will challenge the statement that it is desirable that all working men should be paid wages of greater purchasing power than those provided for in the decisions of the Labor Board. But it will never be possible to do so without a very large increase in the total annual production of the country. The decisions of the Labor Board simply require railway employees, under the conditions actually existing at present, to bear their share of the downward readjustment of money incomes which other people have been, or are being, required to bear. They will, in fact, be better off than other classes of men doing similar work after the reductions of wages go into effect. In these circumstances it seems probable that reason will prevail and that there will be no serious strikes. The employees cannot hope to gain anything by striking. On the contrary, by striking they are sure to cause heavy losses to themselves and others.

Record-Breaking Shipments of Most Commodities

THE STATISTICS regarding the number of carloads of freight which have been shipped within recent weeks are highly significant in some important respects.

Because of the coal strike the loadings of coal have been small. It is a remarkable fact, however, that in every week of the four weeks ending with May 21 the number of cars loaded with commodities other than coal has been larger than in the corresponding week of any other year since car loading statistics have been published. The loadings of commodities other than coal in these four weeks of the last four years have been as follows: 1919, 2,362,310 cars; 1920, 2,675,832 cars; 1921, 2,349,883 cars; 1922, 2,771,674 cars. The loadings of commodities other than coal in these weeks in 1922 represent the following increases over those for the same weeks of the other years mentioned: 1919, 409,364 cars; 1920, 95,842 cars; 1921, 421,791 cars.

The loadings of coal in these weeks were as follows: 1919, 660,608 cars; 1920, 673,531 cars; 1921, 608,627 cars; 1922, 312,179 cars. It will be seen that the loadings of coal in 1922 represent a decline of more than one-half as compared with those of any of the other years mentioned. If the loadings of coal had been as large this year as in either of the preceding years, the number of cars of all kinds of freight shipped would have been larger than in any of the preceding years.

The average number of tons shipped per car probably was somewhat smaller than in preceding years, but in spite of this the figures indicate that if there had been a normal movement of coal the total freight handled in this period would have equalled any previous record.

If the increase in shipments shown had occurred after the

reduction in rates which has been ordered by the Interstate Commerce Commission had gone into effect, those who have claimed that high rates have been preventing a revival of business would have attributed it to the reduction of rates. But changes in rates, actual or prospective, had nothing to do with it. It was obviously due to an improvement in general business conditions, just as the decline of traffic in 1921 was due to bad general business conditions.

Probably the coal strike will not last many weeks longer. After it is ended the railways will have to handle very largely increased shipments of coal to offset the deficiency in coal supply caused by the strike. The total amount of bituminous coal produced this year to the end of May was slightly greater than last year in spite of the strike, but business activity, and especially manufacturing activity, is much greater than a year ago. If this continues to be the case the demand for coal and the amount of it the railways will have to transport will be much larger in the latter half of this year than in the latter half of last year.

If other commodities continue to move in relatively as large volume as recently, and it becomes necessary for the railways to handle, say, two and one-half times as much coal as at present—a conservative estimate—it is evident that their operating officers will have their hands full. It seems not altogether improbable that the country may even get some more experience with traffic congestions and car shortages.

Nobody now looks forward with much fear to the coming of such a condition of affairs. The railways have suffered so long from an acute shortage of traffic and earnings that they would welcome a large traffic and the large gross earnings which would result, even though for a while they did not have enough cars to meet all demands. They still have over 500,000 idle freight cars, of which about 330,000 are in good repair and ready to serve anybody who can furnish loading for them. If, however, traffic in general continues to increase as rapidly as it has recently, it will not be many months until shippers will be quite as much interested in the question of how they are going to get enough railway service as they have been recently in how they could get lower rates.

Giving Force to a Hackneyed Word

ONE HEARS NOWADAYS a lot of talk on "co-ordination." It is unfortunate for a word which means so much to come into such common use that it loses its force. Most of us have heard so much about the "co-ordination of rail and highway transportation," and the same of railways and merchant ships, that we become weary of the terms and bored at the outpourings of statesmen and others who often speak of them. And yet anyone who sees the competition between motor trucks and busses and the railways must realize that "co-ordination" is sadly lacking. One gets the same impression when he sees the fleets of lighters in New York harbor carrying freight from railroad piers to steamships simply because so many railway terminals and steamship terminals have been developed with no thought of each other and with no provision for direct transfer from car to ship, and vice versa. Fortunately some few steps are being taken to co-ordinate rail transportation with highway and water transportation. Such movements, however, are unconscionably slow.

There is one effective method of bringing about co-ordination of the different agencies of transportation which has never been given a thorough trial. That is the working of these several agencies by the same company.

The advocates of store door delivery have made out a good case for the co-operation of the motor truck people and the railways in local deliveries. If the railway should own and

operate these trucks or should be closely associated with the operators, there would be no logical reason why shipments offered to either the railroad or motor truck line and accepted by them for movement beyond the local zone could not be turned over to the other agency if it could handle the shipment with greater economy. This is the kind of co-ordination which would make savings for carriers and ultimately for the public generally.

Similarly, if our merchant ships and railroads were under the same management, we should find more railroad piers with ocean vessels alongside, instead of separate railroad and steamship piers with lighters plying between them. If a few large trunk line railroads should own and operate ocean vessels, co-operation would soon effect such economies that co-ordination would become general, a means of self-preservation for competing railway and steamship lines.

Unfortunately, present legislation does not permit such co-ordination. The ship subsidy bill now before Congress, however, authorizes railway ownership of ships not using the Panama Canal, the Great Lakes or in the coastwise trade. This provision of the bill is worth fighting for.

The professional railroad baiters will probably contest a provision of this kind just as they would any proposal to allow the railways to engage in highway transportation on any considerable scale. Such vehement opposition to measures of this kind is difficult to understand when one bears in mind that if there were any clear indication that the railways were using these other agencies to bring about unfair competition, it would be a very easy matter for Congress to regulate rates by motor or ship as they do such rates on the railroads.

The irretrievable loss brought about by lack of co-ordination is too important a problem to be perpetuated simply because of a vague fear that bringing it about might involve the solution of other problems. Without co-ordination we have a constant loss which is not recoverable. If we do co-ordinate motor, rail and ocean transportation we may have a problem of determining a just distribution of the savings effected. Most readers of the *Railway Age* will agree, we believe, that the constant loss due to present methods is more serious than the problem of distributing the savings once the losses are ended.

New Books

Proceedings of the Thirty-first Annual Convention of the American Railway Bridge & Building Association. Edited by the Secretary; 268 pages, illustrated, 6 in. x 9 in. Bound in cloth and paper, Published by the Association, C. A. Lichty, secretary, Chicago & North Western, Chicago.

This volume contains the proceedings of the thirty-first annual convention of the American Railway Bridge & Building Association, which was held in New York on October 18 to 20, 1921. In addition to a record of the business transactions of the association, including the opening address, etc., it contains the complete reports of eight technical committees, together with the discussion following their presentation. These reports cover tool equipment for pile driver outfits, the recruiting of bridge and building employees, the repair of leaks in water mains, the construction and maintenance of cinder pits, the lining of tunnels under traffic, and the construction and maintenance of passenger platform. There is also an address by C. M. Taylor, superintendent of timber preservation, Central Railroad of New Jersey, on treated timber. Owing to the fact that the larger part of the members of this association are concerned with maintenance and actual construction rather than design, the subjects are treated largely from the standpoint of the man in the field, rather than the office. The volume is well illustrated and the typography is good.

The Story of the Rome, Watertown & Ogdensburgh Railroad; by Edward Hungerford. 269 pages. 5 in. by 7½ in. Robert M. McBride & Co., 7 West Sixteenth Street, New York.

This is not a mere brochure devoted to the railroad named in the title; it is, rather, a quite detailed railroad history of the whole of northern New York State west of the Adirondack wilds and north of the New York Central main line. The author looks first at the human side of every event and incident, and one gets the impression that he is determined to make a vivid story, whether cold history can keep up with him or not; but he seems to have kept his feet on the ground.

The keynote of the book is perhaps best expressed by the frontispiece, a halftone reproduction of an old photograph of the passenger locomotive "Antwerp." The "Antwerp" was one of those handsome flyers—a wood burner with 6 ft. drivers—which gave to the American people of 1845-1865 a conception of the iron horse and its mission that combined utility and poetry in a way never seen elsewhere—or since.

The first chapter of this book sketches transportation history from 1829, and the next four outline the three principal railroad efforts—the Ogdensburgh & Lake Champlain, the Potsdam & Watertown, and the Watertown & Rome. The enlarged company, the R. W. & O., had its ups and downs—glorious ups and severe downs; these vicissitudes, and the absorption of the Utica & Black River, occupy the next five chapters. Charles Parsons, the chief owner of the R. W. & O. from 1883 until he sold out to the New York Central, brought to the road a new general manager, H. M. Britton; and Parsons and Britton were, we judge, the most notable figures after the early pioneers. The New York Central took control in March, 1891, and thenceforward the people of northern New York had to make a virtue of necessity and pretend that the swallowing of their pride was an agreeable process. However, the notable improvements that were made gradually tended to obscure the past, and the successive superintendents sent up there by the New York Central are characterized as brilliant managers.

While Mr. Hungerford writes like a novelist, the reader finds constant evidence of as careful attention to details and to essential business facts as would be expected from a civil engineer or an accountant. Evidently he was brought up in that part of the country from his infancy, and he knew the locomotives, the locomotive runners, the local freight conductors, the telegraphers and all hands; and whatever interesting facts about these people he has had to take second-hand are put together so skillfully that the whole seems to be the narrative of an eye-witness.

This is not saying that the book is chiefly a compendium of roundhouse gossip or a summary of local newspaper stories. The author evidently was acquainted with railroad promoters, presidents and attorneys, as well as with the rank and file and the gossips. The name of the first president of the Watertown & Rome was Orville Hungerford, which suggests that probably our author absorbed all sorts of railroad ideas with his mother's milk.

Being at heart a romancer the author had a difficult task; for the railroad—and also the towns whose fortunes were largely affected by the good or the ill which came to them through the railroads—went through some rather violent changes from prosperity to despair, and vice versa; so that fidelity to the truth made it necessary now and then to tell unpleasant facts and to skim lightly over others too unpleasant to be mentioned. It is even admitted that some of the New York Central superintendents were not paragons.

Not the least interesting feature of the work is to be found in the appendices, one of which is a copy of the flowery prospectus issued by the directors in 1847. The book lacks a map. Most of its readers will be people who know the country perfectly with their eyes shut; but a good map is often useful, even for a study of one's native town.

Letters to the Editor

[The RAILWAY AGE welcomes letters from its readers and especially those containing constructive suggestions for improvements in the railway field. Short letters—about 250 words—are particularly appreciated. The editors do not hold themselves responsible for facts or opinions expressed.]

"Locomotive Engineer" Comes Back

CHICAGO.

TO THE EDITOR:

I seem to have started something. In the issue of May 13 a "Dispatcher" took a crack at me and in that of May 20 we hear from another. I had no idea that dispatchers are so thin-skinned. However, I did not intend to start any argument as to the relative merits of dispatchers and engineers, but hoped that what I had to say would be accepted as constructive criticism, which I believe to be good for business generally, the same as an honest confession is good for the soul. I'll concede everything the Minneapolis dispatcher says of some engineers, for it would be folly to claim that of over 200,000 engineers there are no poor ones. But that only strengthens my plea for better dispatchers and yardmasters, for if an army has some poor privates, it certainly is not going to help the situation to put poor officers over them. I have a deep and profound respect for a good dispatcher, for I can realize what they are up against. And I have worked under enough of them to know a good one by his work, having served upon 16 different divisions of seven roads, from the Great Lakes to the Gulf and from Kansas to the Alleghenies. But please don't confuse me with the old type of "boozie-hoisting boomer," for I never was one of that class, always giving the best I had and always leaving a clear record. I'm merely cursed with itching feet.

There are two sides to the issue of breakdowns. While admitting without argument that there are engineers who are lost in such cases, the large majority do know what is wrong and what to do. I've had plenty of them myself and have had an awful time with some, trying to explain to the dispatcher what the trouble was, but could not get it through his head simply because he was not mechanically educated enough to understand. But that is not to his discredit—he has enough to do without knowing the anatomy of a locomotive.

Your Minneapolis correspondent makes a broad assertion when he says that the engineer of today would rather be proficient in brotherhood schedules than in machinery. There are some like that (more shame to them) but they are in the minority. An engineer positively has to know something to run the engines of today and if additions and appliances keep being added, it will soon take a graduate mechanical engineer to run them; they have already reached a point where they are no longer locomotives; they are power plants on wheels.

But if we have some poor engineers now just sit tight and wait a few years and there will be far worse to be seen, except upon those roads which are using the mechanical stokers. The rising generation is getting a better education, and an educated young man absolutely will not take a job firing the present-day hogs with a scoop. I don't blame him—I wouldn't do it for a dollar a mile. Therefore, as firemen, we are already commencing to get men who would not have been considered as anything but common labor for such jobs as track repair work a few years ago. We have some right now who cannot speak clear English and have to ask the engineer to write their names on the time-slip as

their own chirography is illegible. Can you imagine the type of engineers they are going to make?

The correspondent says there is no doubt as to my preferring old methods. I distinctly stated in my letter that I do not. He mentions indefinite terminal delays. Preparatory time we shall always have, for it takes 30 minutes to get a big engine ready to go. As to 30 minutes for eating and 30 more for adjusting suspenders, etc.—if such conditions exist on his road, it is sadly in need of some new operating officers. In all my travels I have never seen a place where anybody could get away with that kind of delay, with one exception. A new superintendent changed that in just two weeks.

Now for the thing which seems to stir the dispatchers most. For reasons of my own, I'm not going to mention the particular road where so many trains were operated over single track, but I have covered enough ground to be able to cite an example to convince the "doubting Thomases" that it can be done. The winter of 1912-13, I worked over a piece of single track from Ft. Worth to Whitesboro, Tex., jointly operated by the T. & P. and the M. K. & T. If my memory is correct, the distance is 71 miles. I can recall coming out of Ft. Worth as high as the 10th or 12th section of a schedule and still carrying "green"; and meeting one to three trains at every siding from there to Whitesboro, to say nothing of letting a couple of passenger trains by. I never saw finer dispatching anywhere than right there, for when you had a meet with a train, the other fellow was either there or in sight when you arrived. Also, they didn't give you five minutes on a first-class train when she was 35 minutes late—they gave it all to you, provided, of course, that the connecting divisions gave them correct figures on when to expect them. Things certainly went well there, though some fellow would frequently upset calculations by stalling on Black Riley or Brickyard hills.

I'll not make any statement as to the number of trains operated, but will ask some officer of the T. & P. at Ft. Worth to let us know through this column, what the average and record high numbers of trains moved per 24-hour period were during the winter of 1912-13.

LOCOMOTIVE ENGINEER.

The Control of Segregation in Rail Steel by Use of Silicon or Titanium

NIAGARA FALLS, N. Y.

TO THE EDITOR:

In view of the interest which is being aroused among railway engineers in the prevention of segregation in rail steel, a consideration of the possible means of attaining this object might be worth while at the present time. The main principle is to produce a steel which solidifies perfectly quietly in the molds, without any gas evolution. Then practically all the segregate which is formed in the selective freezing of the alloy is held in minute particles between the branches of the dendritic crystals throughout the ingot, instead of being swept up into one large body at the center of the top of the ingot by rising gases, or concentrated in somewhat smaller amounts in the blowhole cavities. The addition of a deoxidizer in sufficient amount to the liquid steel is a simple means of securing the desired quiet solidification in the molds, and the question resolves itself into a choice of which deoxidizer should be used, aluminum, manganese, silicon or titanium.

Aluminum is ruled out by most of the rail specifications, because of the probability that steel in which it is used will be seriously contaminated by its infusible oxide, alumina. Manganese is used in all steel on account of its effect on sulphur, but its deoxidizing power is not strong enough to insure thoroughly "killed" steel by its use alone, even when

it is present to such an extent that the steel becomes too hard and brittle for rails. This leaves silicon and titanium as the two practical deoxidizers on which reliance is ordinarily placed for the production of sound, quiet-setting steel.

Silicon is, of course, used to a certain extent in all rail steel, but generally in too small quantities to insure thorough deoxidation, because of the fear that larger quantities will cause too deep a pipe in the ingots. The opinion is prevalent that segregation may be readily controlled by this element, but unfortunately this is not always the case. Some interesting data on this point are given in rail report Bulletin No. 7, published in 1914 by the Titanium Alloy Mfg. Company. On page 4 there is a summary of the analyses of all the rails exhaustively tested for this series of bulletins, and the degree of segregation in each rail is shown by the difference between the low and high values for carbon. The silicon contents are also given for each rail, so that the degree of segregation corresponding to each silicon content may be conveniently studied by rearranging the data for the 17 untreated rails according to the table given below. The rails are here classified into five groups according to their silicon contents, determined by averaging the high and low values given in the bulletin, and the percentage of segregation as shown by the carbon determinations is given for each group.

Sample No.	Silicon content	Carbon determinations		Per cent segregation
		Low	High	
13	.193	.55	.82	..
1	.175	.64	.89	..
9	.160	.58	.90	..
Average	.16 to .20	.59	.87	47.
5	.150	.70	.95	..
2	.143	.64	.88	..
6	.135	.67	1.03	..
8	.135	.63	.84	..
Average	.13 to .16	.66	.93	41.
7	.120	.54	.76	..
3	.117	.71	.93	..
4	.111	.65	.95	..
Average	.11 to .13	.63	.88	40.
11	.109	.64	.71	..
15	.108	.53	.81	..
10	.105	.63	.89	..
12	.100	.64	.92	..
Average	.10 to .11	.61	.83	36.
14	.074	.64	.88	..
17	.054	.43	.64	..
16	.053	.38	.57	..
Average	.05 to .10	.48	.70	46.

This table shows that in this series of 17 representative heats from various mills and rollings the rails with the highest silicon content were the most segregated, and differed very little in segregation from those with the lowest silicon. The least segregated rails were those of the group with the next to the lowest silicon content. Thus it is evident that the degree of segregation in these rails had no definite relation to the silicon content of the steel, and the conclusion seems inevitable that it is not safe to rely on a minimum limit for silicon as an assurance that dangerous segregation will be avoided.

The effect of titanium-treatment on segregation has been investigated more thoroughly, and shows more interesting and consistent results. This subject is discussed in detail in the Titanium Alloy Mfg. Company's rail report bulletins 8 and 9, and the results have also been published in the technical press. Out of 101 titanium-treated A-rails from various mills and rollings only six showed segregation over 12 per cent, while among 111 untreated rails rolled at the same time 66 were segregated to that extent. Furthermore, the only two treated rails that were seriously segregated (over 15 per cent) showed less than the minimum titanium content (0.005 per cent) which is normal for a properly treated heat. Titanium-treatment, therefore, checked by a determination of residual titanium content, gave a truly effective safeguard against excessive segregation in this large series in which it was investigated. This deoxidizer does not contaminate the steel with its oxidation products, as aluminum and silicon do, and it is unquestionably efficient in controlling segregation.

G. F. COMSTOCK,
Metallurgist, The Titanium Alloy Manufacturing Co.



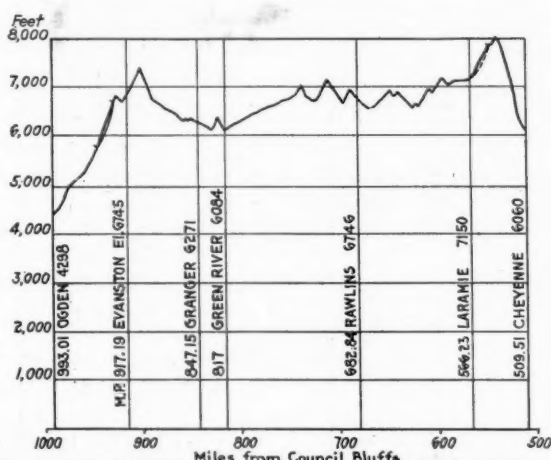
Union Pacific Mountain Type Locomotive for Heavy Passenger Service

A Mountain Type Locomotive for High Capacity

New Union Pacific Locomotive Is Lightest Per Unit of Power of Any 4-8-2 Yet Built

THE FIRST Mountain type locomotive to be employed on its line was recently delivered to the Union Pacific by the American Locomotive Company. This locomotive is the lightest in proportion to maximum horsepower capacity, of any locomotive of this type which has yet been built and the design is the result of an unusually painstaking study both by the railroad staff and by the builders.

The locomotive has a total weight of 345,000 lb. of which 230,000 lb. is on the drivers. It has a maximum tractive effort of 54,800 lb., and, using Cole's ratios as a basis of comparison, has a maximum horsepower capacity of 3,030



Max. Up	West Bound	0.6	0.82	0.82	0.82	.82:1.55
Grade	East Bound	1.14	0.82	0.82	0.82	.82: D

Profile of the Line Over Which the New Mountain Type Locomotive Will Operate

with a 98.5 per cent boiler and a grate area about 4 per cent greater than that called for by Cole's ratios, in proportion to the evaporative capacity. The locomotives will burn a semi-bituminous coal, low in ash but high in moisture, which has a heat value of about 12,000 B.T.U. per lb. In point of weight per unit of capacity the new locomotive compares very favorably with No. 50000, the American Locomotive Company experimental Pacific type. This engine established a record of 110.8 lb. total weight of locomotive in working order per cylinder horsepower, by Cole's method of calculation. The new Union Pacific locomotive weighs 113.9 lb. per cylinder horsepower and 115.8 lb. per boiler horsepower. The No. 50000, with a 92 per cent boiler, weighs 120.5 lb. per boiler horsepower.

The new Mountain type locomotive is intended primarily for use in passenger service between Cheyenne, Wyo., and Ogden, Utah, a distance of 484 miles over which, because of the long and frequent grades encountered, passenger trains are now handled by Mikado type locomotives. The character of the line is shown in the accompanying profile. With trains varying from 8 to 13 cars the time card calls for schedules averaging from 28 to 31 miles an hour between Cheyenne and Laramie and from 26 to 32½ miles per hour between Evanston and Ogden.

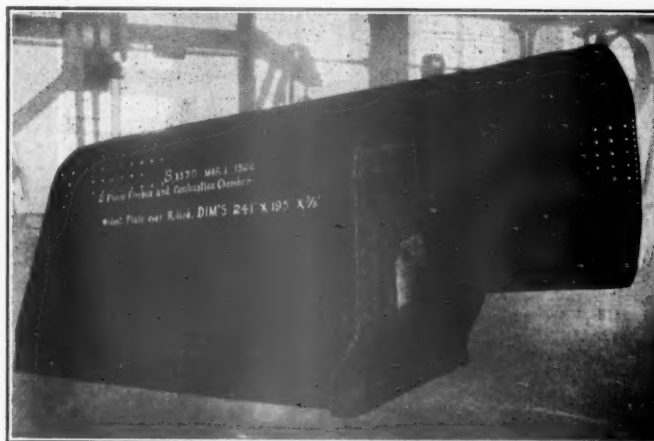
Although the net difference in elevation between Laramie and Evanston is not as great as on either of the above named districts, the grades are long and numerous. Westbound the schedules vary from 33.3 to 43.7 miles an hour between Laramie and Rawlins, from 35 to 42.4 miles an hour from

Rawlins to Green River and from 30.9 to 36.4 miles an hour from Green River to Evanston. Eastbound the schedules call for average speeds of from 33.4 to 36.1 miles an hour between Evanston and Green River, 34.3 to 36.6 miles an hour from Green River to Rawlins and 35 to 37 miles an hour from Rawlins to Laramie. Few stops are called for on any of the overland trains except at division points.

To maintain these schedules with Mikado type locomotives it has been necessary to resort to high running speeds on the down grades to make up for the comparatively low speeds on the heavy up-hill pulls. This has had a marked effect in increasing track maintenance and to some extent the cost of locomotive maintenance. The Mountain type locomotive with its high sustained capacity is expected to bring the maximum and minimum operating speeds more nearly to the average which, in addition to its effect on maintenance costs will produce more economical locomotive operation and facilitate the operation of the road generally.

The design of a locomotive of this type was first considered in the fall of 1920. During the preliminary stages many valuable suggestions were received both from the Baldwin Locomotive Works and the Lima Locomotive Works, Inc., as well as from the American Locomotive Company. The final design, however, was worked out practically complete in detail by the railroad's own staff.

In general the boiler is similar in capacity and dimensions to the boiler of the Union Pacific 2-10-2 type locomotive. It is conical in form with an outside diameter of 84 in. at



The Firebox Side Sheets and Crown Sheet and Combustion Chamber Are All in One Piece, the Throat Sheet Being Welded in as Shown by the Light Line

the front barrel course, increasing to 96 in. at the combustion chamber course. The firebox measures 126 in. by 96 in. at the grate and includes a combustion chamber the length of which is such as to provide for tubes 22 ft. long. One of the notable features in the design of the boiler is the location of the steam dome on the conical course at a point above the center of oscillation of the water in the boiler. This provides a uniform steam space under all conditions of grade, considerably removed from the zone of violent ebullition over the crown sheet. The firebox is fed by a Duplex stoker and the boiler is fitted with a 48-unit superheater.

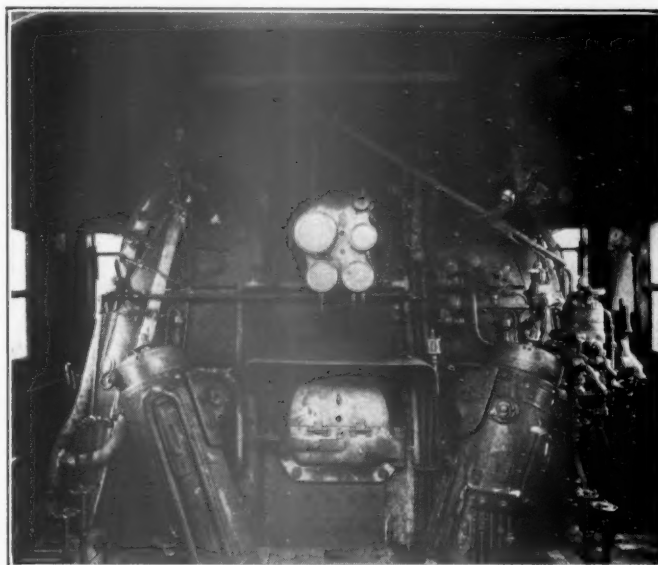
The boiler shell courses are of ¾-in., 13/16-in. and 7/8-in.

material, respectively, and the wrapper sheet is 9/16 in. thick. The firebox crown, sides and the combustion chamber are of 3/8-in. sheets, with a 1/2-in. throat connection sheet welded in between the side sheets and the combustion chamber. The form of this sheet is shown in one of the photographs. The firebox is fitted with F.B.C. welded staybolt sleeves and bolts of reduced body diameter.

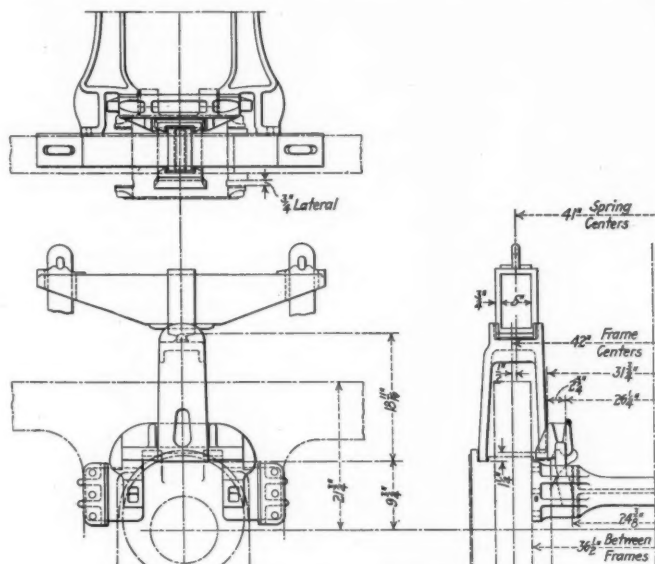
Steam distribution is controlled by the Young valve gear, and the Alco power reverse gear. The Young valve motion provides a maximum travel of 9 in. and drives a 14-in. piston valve. The locomotive is also equipped with a Fetters automatic drifting valve. This device insures the constant admission of a small supply of saturated steam to the cylinders as long as the locomotive is in motion with the throttle closed. The admission of saturated steam is controlled by a diaphragm operated valve, one side of the diaphragm being loaded at a pressure of 40 lb. per sq. in. by a small oil pump driven from the valve motion link trunnion, and the other acted on by the dry pipe pressure. Either the opening of the throttle or the stopping of the engine cuts off the saturated steam supply, thus making the device entirely automatic.

The frames are of straightforward, rugged design, in general following the practice of the builders as to the dimensions of the sections. Between the cylinder saddle and the front pedestal the frame takes the form of a deep slab section. This, however, has been lightened by coring out the middle portion of the slab for a part of the thickness on the outside, the reduction in the mass of metal at this point being of considerable advantage in the foundry. The binders of the main pedestal are fitted with three bolts, and

genious bell crank arrangement, the trunnions of which are carried on lugs projecting from the top of the box inside the frames. The horizontal arm of this bell crank extends laterally across the top of the box and forms the seat for the inside leg of the spring saddle. Normally, it rests on the top of the box. The vertical arm of the bell crank is carried down on either side of the axle, lugs on the lower ends fitting in recesses between the inside face of the frame and flanges on the cross braces bolted to the pedestal faces. The clearance in these recesses permits the movement of the box outward without operating the bell crank. Inward movement of the box, however, causes the engagement of the lugs



The Fittings Inside the Cab Are Unusually Well Arranged



New Design of Woodard Lateral Motion Driving Box

heavy toes have been provided on the front and main jaws.

A notable feature of the frame construction is the location of the furnace bearer-supports directly under the sides of the mudring, these supports forming a part of the cradle casting. The furnace bearers are fitted with compression grease cups.

Several features of the running gear are of particular interest. The forward pair of drivers are fitted with the Franklin lateral motion device, which has recently been re-designed to effect a material saving in weight. The forward driving boxes are not joined together, as was the case in the former design, each being provided with a limited lateral movement by spreading the shoe and wedge flanges of the boxes to provide clearance both inside and outside the frame jaw. When not operating under lateral thrust each box is retained in a normal central position by means of an in-

on the bell crank arm against the flanges of the cross braces and results in raising the horizontal arm of the bell crank up from the top of the box. This tilts the spring saddle and creates a load which, acting through the bell crank, resists the lateral displacement of the box. This device is shown in one of the drawings.

The main driving journals are fitted with long driving boxes, the design of which provides for the use of a spring saddle, rather than seating the spring directly on the cross equalizer. Instead of delivering the load at a single point at the center of the box this design permits the load to be applied equally at the two ends of the long main box the same as in the cases of boxes of the usual type located symmetrically with respect to the center line of the frame. Driving boxes are fitted with Franklin automatic wedges.

The engine truck is of the Woodard constant resistance type and Woodard constant resistance rollers have been incorporated in the design of the trailer truck.

The side rods are fitted with spherical bushings on the front crank pins and a floating bushing has been applied at the main crank pin connections. Annealed carbon-vanadium steel has been used in the side and main rods, piston rods, driving and trailing truck axles and in the main crank pins. The piston heads are of Z-section cast steel, faced with phosphor bronze poured in place. The cylinder and valve bushings, the cross head shoes and piston rings are of Hunt-Spiller gun iron.

The following table shows the weights of the reciprocating parts:

Piston rod (hollow).....	334 lb.
Piston head.....	505 lb.
Packing rings.....	100 lb.
Total weight of piston complete.....	939 lb.
Main rod, complete.....	864 lb.
Crosshead, with shoes.....	640 lb.

is also equipped with a Madison-Kipp force feed lubricator.

The principal dimensions and data of the locomotive are as follows:

GENERAL DATA

Service	Passenger
Fuel	Semi-bituminous coal
Tractive effort.....	54,800 lb.
Weight in working order.....	345,000 lb.
Weight on drivers.....	230,000 lb.
Weight on leading truck.....	59,000 lb.
Weight on trailing truck.....	56,000 lb.
Weight of engine and tender in working order....	582,800 lb.
Wheel base, driving.....	19 ft. 6 in.
Wheel base, total.....	41 ft. 3 in.
Wheel base, engine and tender.....	79 ft. 11½ in.

RATIOS

Weight on drivers ÷ tractive effort.....	4.19
Total weight ÷ tractive effort.....	6.29
Tractive effort × dia. drivers ÷ equivalent heating surface*	585.5
Equivalent heating surface* ÷ grate area.....	81.4
Firebox heating surface ÷ equivalent heating surface,* per cent.....	5.6
Weight on drivers ÷ equivalent heating surface*..	33.6
Total weight ÷ equivalent heating surface*.....	50.5
Volume both cylinders.....	21.5 cu. ft.
Equivalent heating surface* ÷ vol. cylinders.....	330.9
Grate area ÷ vol. cylinders.....	4.1

CYLINDERS

Kind	Simple
Diameter and stroke.....	29 in. by 28 in.

VALVES

Kind	Piston
Diameter	14 in.
Greatest travel.....	9 in.
Maximum cut-off.....	90 per cent.
Steam lap.....	1½ in.
Exhaust clearance.....	3/16 in.
Lead	¼ in.

WHEELS

Driving, diameter over tires.....	73 in.
Driving journals, main, diameter and length.....	12 in. by 16 in.
Driving journals, others, diameter and length.....	10 in. by 12 in.
Engine truck wheels, diameter.....	33 in.
Engine truck journals, diameter and length.....	6½ in. by 12 in.
Trailing truck wheels, diameter.....	45 in.
Trailing journals, diameter and length.....	9 in. by 14 in.

BOILER

Style	Conical
Working pressure.....	200 lb. per sq. in.

Outside diameter, first ring.....	84 in.
Tubes, number and outside diameter.....	239—2¼ in.
Flues, number and outside diameter.....	48—5½ in.
Tubes and flues, length.....	22 ft.
Firebox, length and width.....	126 in. by 96 in.
Firebox water, space.....	Front, 6 in.; others, 5 in.
Firebox plates, thickness.....	Tube and throat, ½ in.; others, ¾ in.
Heating surface, firebox (including arch tubes)....	382 sq. ft.
Heating surface, tubes.....	3,084 sq. ft.
Heating surface, flues.....	1,508 sq. ft.
Total evaporative heating surface.....	4,974 sq. ft.
Superheating surface.....	1,242 sq. ft.
Equivalent heating surface*.....	6,837 sq. ft.
Grate area.....	84 sq. ft.

TENDER

Tank	Cylindrical
Frame	Commonwealth
Weight, loaded.....	237,800
Truck	6-wheel
Wheels, diameter.....	33 in.
Journals, diameter and length.....	6 in. by 11 in.
Water capacity.....	10,000 gal.
Coal capacity.....	10 tons

*Equivalent heating surface = evaporative heating surface + 1½ times superheating surface.

Freight Car Loading

WASHINGTON, D. C.

THE NUMBER OF CARS loaded with revenue freight showed another large increase during the week of May 27 to a total of 821,121 as compared with 795,335 in the corresponding week of last year and 898,169 in 1920. This was an increase of 28,000 in a week. With a normal coal movement the total would have been greater than that for 1920. All classes of commodities except coke showed an increase as compared with the week before and all except grain and grain products, coal and ore showed increases as compared with last year. Decreases as compared with last year, however, were shown in the Eastern, Allegheny, Central Western and Southwestern districts. The coal loading, 91,370 cars, was the largest since the beginning of the strike, an increase of over 9,000 as compared with the week before, but this was a decrease of 74,241 as compared with last year. The summary as compiled by the Car Service Division of the American Railway Association follows:

REVENUE FREIGHT LOADED

SUMMARY—ALL DISTRICTS, COMPARISON OF TOTALS THIS YEAR, LAST YEAR, TWO YEARS AGO. WEEK ENDED SATURDAY, MAY 27, 1922

Districts	Year	Total revenue freight loaded								Corresponding year, 1921	Corresponding year, 1920
		Grain and grain products	Live stock	Coal	Coke	Forest products	Ore	Mdse. L.C.L.	Miscellaneous		
Eastern	1922	9,960	2,893	8,253	1,335	5,879	3,028	71,173	89,871	192,392	.....
	1921	7,601	2,920	46,071	1,124	5,815	2,788	58,965	68,716	194,000	212,401
Allegheny	1922	2,741	3,090	15,670	4,856	2,796	2,739	52,492	71,183	155,567	.....
	1921	2,533	3,521	52,971	2,657	2,664	7,180	45,594	51,329	168,449	185,251
Pocahontas	1922	224	140	30,482	210	1,526	41	6,223	4,118	42,964	.....
	1921	202	127	23,733	183	1,286	21	5,136	3,338	34,026	31,485
Southern	1922	3,554	2,205	24,304	673	20,415	966	37,544	42,900	132,561	.....
	1921	4,912	1,751	18,972	475	15,121	893	36,261	36,332	114,717	125,487
Northwestern	1922	12,923	8,047	6,555	1,425	18,656	14,100	30,494	36,489	128,689	.....
	1921	11,384	7,392	4,682	729	14,381	16,088	26,870	31,498	113,024	151,802
Central Western.....	1922	12,048	10,501	3,986	202	6,535	2,476	33,409	40,591	109,748	.....
	1921	14,691	9,990	14,994	194	5,964	693	30,259	34,575	111,270	121,563
Southwestern	1922	4,262	2,626	2,120	150	8,213	521	15,996	25,312	59,200	.....
	1921	5,278	2,466	4,188	169	6,497	761	15,496	24,994	59,849	70,180
Total Western Dists..	1922	29,233	21,174	12,661	1,777	33,404	17,097	79,899	102,392	297,637	.....
	1921	31,353	19,758	23,864	1,092	26,842	17,542	72,625	91,067	284,143	343,545
Total all roads.....	1922	45,712	29,502	91,370	8,851	64,020	23,871	247,331	310,464	821,121	.....
	1921	46,601	28,077	165,611	5,531	51,728	28,424	218,581	250,782	795,335	.....
	1920	33,038	28,677	174,612	11,680	62,247	69,426	150,557	367,932	.....	898,169
Increase compared....	1921	.....	1,425	.....	3,320	12,292	.....	28,750	59,682	25,786	.....
Decrease compared....	1921	889	.....	74,241	.....	.....	4,553	.....	.....	.....	.....
Increase compared....	1920	12,674	825	.....	.....	1,773	.....	96,774	.....	.....	.....
Decrease compared....	1920	.....	.....	83,242	2,829	.....	45,555	.....	57,468	77,048	.....
May 27.....	1922	45,712	29,502	91,370	8,851	64,020	23,871	247,331	310,464	821,121	795,335
May 20.....	1922	42,772	29,133	81,967	9,335	61,930	16,971	243,971	306,434	792,459	770,991
May 13.....	1922	42,270	29,940	79,170	8,813	60,661	14,403	241,418	300,684	777,352	751,186
May 6.....	1922	40,125	30,496	75,410	8,124	57,132	11,766	242,945	289,751	755,749	721,722
April 29.....	1922	36,398	30,488	75,632	7,952	59,112	14,053	242,565	292,086	758,286	721,084

Valuations Served on 231 Railroads

FIGURES COMPLETE to May 12, 1922, show that tentative valuations have been served on 231 railroads by the Interstate Commerce Commission. This statement is taken from a bulletin prepared by Frederick H. Lee for the Presidents' Conference Committee. This indicates that 47 tentative valuations have been issued since the last previous statement on this matter which was abstracted in the *Railway Age* of February 18, 1922, page 433. Some of the valuations are for railroad systems which include a number of properties so that the tentative valuations actually served include 326 properties with a total of 32,987 miles of road and 46,349 miles of track. In addition to the tentative valuations, 248 preliminary engineering reports, 260 land reports and 153 accounting reports have been sent to the carriers for examination and informal objection or protest.

Most of the carriers served with valuations have filed protest. The principal objection to the estimated cost of reproduction is due to the application of low unit prices, improper classification, inadequate quantities and insufficient estimates for interest during construction and general expenditures. The carriers also claim that the amount reported as the present value of lands is too low, that the excess cost of acquisition as reported by the commission but not included in the figure of final value should be added thereto. The status of valuation work is expressed in the first of the following tables showing mileage for Class I, II and III carriers on which the tentative valuations have been served.

The large table gives valuation data on the railroads which have been served tentative valuations subsequent to January 20, 1922, and supplements similar tables published in the *Railway Age* of August 1, 1921, page 288 and February 18, 1922, page 433.

Number of carriers and mileages on which tentative valuations have been served to May 12, 1922, together with the percentage relation the completed mileage bears to the total mileage of railroads in the United States.

	Number of tentative valuations	Number of carrier properties	*Miles owned (Used and not used)		Percentage relation completed		Mileage of railroads in the U. S. from 1916, 1918 and 1919 I.C.C. Statistical Vols.	
			Road	All tracks	Road	All tracks	Road	All tracks
Class I and Leased Lines	34	125	27,376	39,389	11 3/4	10 1/4	232,411	375,425
Class II	51	53	3,428	4,214	20	18 1/2	16,967	22,832
Class III	89	90	1,874	2,115	26	21 1/2	7,195	9,994
Terminal Companies	40	40	108	397	6	7 1/2	1,705	5,138
Electric Companies	2	2	16	20	....	....	None	Not reported
Unclassified	15	16	185	214	3	....	6,088	Not reported
	231	326	*32,987	*46,349	12 1/4	11 1/4	264,366	413,389

*These figures are very close approximations. A small amount of undivided joint mileage is included in the mileage of some of the joint owners and not allocated. To this extent a slight duplication of mileage occurs in the totals.

TENTATIVE VALUATIONS

STATEMENT SHOWING ORIGINAL COST TO DATE; COST OF REPRODUCTION; ORIGINAL COST, PRESENT VALUE AND EXCESS COST OF LANDS, ETC.; "FINAL VALUE"; INVESTMENT IN ROAD AND EQUIPMENT AND CAPITALIZATION AS STATED IN THE VALUATIONS BY THE INTERSTATE COMMERCE COMMISSION

Date of valuation, June 30, Year	†Owned, Used and not used (includes undivided joint mileage)	Miles of road	Miles of all tracks	Carrier	"Final value"					Investment in road and equipment (general balance sheet account 701 as of date of valuation)		Capitalization (general balance sheet accounts 751 to 753, 755 to 757, as of date of valuation)	
					Wholly owned and used \$	Owned but not used \$	Used but not owned \$	Total owned \$	Total used \$	Carriers' books \$	Accounting section's restatement (italics ours) \$	Stock (common and preferred) \$	Debt (bonds, equipment trust and receivers' certificates) \$
1917	38	43		Durham & S. Car. R. R. Co.	460,796	.....	.....	460,796	460,796	874,591	857,001	500,000	300,000
1916	129	163		The Ulster & Del. R. R. Co.	6,468,019	.....	4,870	6,468,019	5,472,889	5,780,913	5,117,898	1,900,000	3,000,000
1916	116	124		New Mex. Central R. R. Co.	1,365,024	.....	.....	1,365,024	1,365,024	5,364,598	.....	5,000,000	3,250,000
1915	237	297		Southern Ry. Co. in Miss.	4,470,534	.....	208,011	4,470,534	4,678,545	610,656	.....	50,000	836,149
	321	615		N. Y., Ont. & W. Ry. Co.	34,495,193	.....	10,556,177	34,495,193	45,051,370	85,101,627	71,588,062	58,117,983	30,128,000
	13	17		Rome & Clinton R. R. Co.	.....	405,000	.....	405,000	.....	360,000	.....	345,360	.....
	31	52		The U. Cl. & B. R. R. Co.	.....	1,275,000	.....	1,275,000	.....	1,690,566	1,690,566	849,224	800,000
	7	9		Wharton Valley Ry. Co.	.....	200,000	.....	200,000	.....	145,000	.....	70,000	75,000
	72	158		Ont. Carb. & S'n Ry. Co.	.....	6,250,000	.....	6,250,000	.....	3,807,954	3,574,000	1,500,000	1,500,000
1916	4	5		Pecksport Conn'g Ry. Co.	.....	100,000	.....	100,000	.....	80,061	80,061	40,000	40,061
	28	35		Ellenv. & King, R. R. Co.	.....	900,000	.....	900,000	.....	950,000	950,235	300,000	650,000
	38	44		P. Jer., M. & S. R. R. Co.	.....	875,000	.....	875,000	.....	560,000	560,000	110,000	450,000
	514	935		New York, Ontario & W. Ry. Co. (Total for Val. Docket)	34,495,193	10,005,000	.....	44,500,193	45,051,370	92,695,208	78,947,924	.....	.....
1917	42	46		Artesian Belt R. R. Co.	443,281	.....	.....	443,281	443,281	92,044	90,083	70,000	.....
1916	48	60		Butler County R. R. Co.	907,490	.....	2,906	907,490	910,396	1,034,394	1,027,070	200,000	153,000
1915	..	2		C. Un. D. & Ry. Co. of Cin.	670,808	300,000	424,870	970,808	1,095,678	1,199,649	1,193,399	712,500	250,000
1916	..	1		F. Worth Un. Pas. Sta. Co.	210,230	.....	.....	210,230	210,230	91,866	.....	90,800	1,066
1916	30	32		Frank. & Pittsylv. R. R. Co.	328,308	.....	76,000	328,308	404,308	205,741	.....	202,650	.....
1916	35	38		G'nesv. & Northw. R. R. Co.	517,248	.....	.....	517,248	517,248	782,562	.....	750,000	2,000
1916	21	26		Greenw. & J'nsonv. Ry. Co.	901,912	.....	.....	901,912	901,912	791,563	819,562	225,000	517,360
1916	36	83		Lake S. & Ishp'm'g Ry. Co.	4,902,156	.....	1,222	4,902,156	4,903,378	3,750,466	3,937,456	1,000,000	1,201,000
1916	2	7		Minneapolis West. Ry. Co.	712,592	.....	81,496	712,592	794,088	769,058	627,375	750,000	19,058
1915	1,014	1,879		Chic. & East. Ill. R. R. Co.	64,612,109	1,470,000	4,594,644	66,082,109	69,206,753	78,990,279	71,136,042	18,301,752	68,880,150
1917	5	37		The Newb'g & S. S. Ry. Co.	3,272,897	.....	481,649	3,272,897	3,754,546	3,451,223	3,450,741	1,500,000	316,293
1916	14	18		Salt Lake & Los A. Ry. Co.	315,391	.....	38,512	315,391	353,903	660,293	.....	300,000	300,000
1915	10	12		Holton Interurban Ry. Co.	200,349	.....	656,000	200,349	856,349	336,678	337,357	200,000	100,000
1916	6	6		Memphis Union Station Co.	2,340,757	.....	793	2,340,757	2,341,550	2,344,920	.....	100,000	2,500,000
	642	955		Maine Central R. R. Co.	44,030,606	56	17,050,775	44,030,662	61,091,384	37,234,526	35,814,268	15,029,415	19,477,500
	13	15		Dexter & Newp. R. R. Co.	.....	250,000	.....	250,000	.....	311,706	311,706	122,000	175,000
	33	38		Belf. & M'sh. L. R. R. Co.	.....	975,000	.....	975,000	.....	819,303	819,303	648,100	33,500
	120	188		European & N. Amer. Ry.	.....	5,100,000	.....	5,100,000	.....	4,035,917	4,124,210	2,490,800	1,000,000
	19	24		Eastern Maine Ry. Co.	.....	650,000	.....	650,000	.....	229,762	.....	200,000	.....
	109	160		The Port. & Ogdens'g Ry.	5,072,030	.....	.....	5,072,030	.....	6,740,767	6,670,501	4,392,538	2,119,000
	17	21		Dex. & Piscataq. R. R. Co.	.....	485,000	.....	485,000	.....	313,084	313,084	122,000	175,000
1916	42	51		Upper Coos R. R. (N. H.)	.....	890,000	.....	890,000	.....	1,160,029	1,160,029	350,000	1,043,000
	2	3		Upper Coos R. R. (Vt.)	.....	87,500	.....	87,500	.....	26,796	26,796	32,000	29,407
	12	14		Coos Valley R. R. Co.	.....	360,000	.....	360,000	.....	252,107	252,107	60,000	231,673
	67	97		Port. & Rumford Falls Ry.	.....	2,800,000	.....	2,800,000	.....	2,896,257	2,082,223	2,000,000	2,051,000
	36	44		Rum. F. & Ra. L. R. R. Co.	.....	875,000	.....	875,000	.....	962,908	784,953	300,000	700,000
	1,112	1,610		Maine Central R. R. Co. (Total for Val. Docket)	44,030,606	17,544,586	.....	61,575,192	61,091,384	54,983,162	52,588,942	.....	.....

			"Final value"						Investment in road and equipment (general balance sheet account 701 as of date of valuation)		Capitalization (general balance sheet accounts 751 to 753, 755 to 757, as of date of valuation)	
			"After careful consideration of all the facts herein contained, including appreciation, depreciation, going concern value, working capital and all other matters which appear to have a bearing upon the values here reported, the values, as that term is used in the Interstate Commerce Act, of the property of the carrier owned and used, used but not owned, and owned but not used, devoted to common carrier purposes, are found to be as follows:"									
Date of valuation, June 30, Year	†Owned, Used and not used (includes undivided joint mileage)		Carrier	Wholly owned and used \$	Owned but not used \$	Used but not owned \$	Total owned \$	Total used \$	Carriers' books \$	Accounting section's restatement (italics ours) \$	Stock (common and preferred) \$	Debt (bonds, equipment trust and receivers' certificates) \$
	Miles of road	Miles of all tracks										
1917	11	13	Port. & Southw. R. R. Co.	330,616	.....	.....	330,616	330,616	371,740	451,388	360,000	.....
	222	348	Arizona Eastern R. R. Co.	10,681,198	.....	2,711,016	10,681,198	13,392,214	14,232,694	12,831,208	9,000,000	11,348,496
1915	92	102	Phoenix & East. R. R. Co.	.....	2,325,000	.....	2,325,000	.....	4,994,954	4,994,954	2,381,500	3,902,449
	314	450	Arizona Eastern (Total for Val. Docket)	10,681,198	2,325,000	.....	13,006,198	13,392,214	19,227,648	17,826,162	.....	.....
1916	1	2	Sainte Marie Un. Depot Co.	175,360	.....	.....	175,360	175,360	120,553	123,497	75,000	45,553
1918	9	9	The Tabor & North. Ry. Co.	120,000	.....	4,181	120,000	124,181	92,918	83,088	25,300	50,000
1918	1	1	Delray Terminal R. R. Co.	154,264	.....	.....	154,264	154,264	131,291	72,258	50,000	165,631
1916	2	6	Duluth Terminal Ry. Co.	515,000	.....	.....	515,000	515,000	407,464	402,339	400,000	7,464
1916	13	14	Linville River Ry. Co.	249,662	.....	47	249,662	249,709	160,557	255,757	60,000	185,529
1917	331	428	Louisiana Ry. & Nav. Co.	10,796,479	60,000	.....	10,856,479	10,796,479	20,963,665	20,958,567	8,131,000	10,546,328
1916	106	150	Northern Alabama Ry. Co.	3,189,429	.....	.....	3,189,429	3,189,429	3,834,854	3,831,554	1,943,300	2,344,768
1916	1	2	Columbia Union Station Co.	162,331	.....	13,340	162,331	175,671	135,015	None	100,000	30,922
1916	1	2	The Dul. & Sup. Bridge Co.	640,000	.....	.....	640,000	640,000	1,359,693	None	200,000	950,000
1916	20	39	Raritan River R. R. Co.	1,215,416	.....	1,230	1,215,416	1,216,646	1,311,073	1,289,755	540,000	400,000
1916	4	6	Wildwood & Delaware Bay Short Line R. R. Co.	190,000	.....	704	190,000	190,704	757,719	None	378,000	428,100
709	1,382	1,382	Boston & Maine R. R.	101,712,971	58,016	132,475,845	101,770,987	234,189,816	90,653,840	88,090,755	49,156,811	42,774,000
126	313	313	Bos. & Lowell R. R. Corp.	26,500,330	.....	.....	26,500,330	.....	15,549,289	15,619,822	9,067,144	6,520,000
14	49	49	Nash. & Low'l R. R. Corp.	1,860,017	.....	(3-2 Lands) 13,637	1,860,017	.....	911,601	917,316	800,000	.....
	13	22	Stoney Brook R. R. Corp.	530,000	.....	.....	530,000	.....	301,101	301,101	300,000	.....
	15	21	Wilton Railroad Co.	410,000	.....	.....	410,000	.....	242,749	250,207	240,000	.....
	11	12	Peterborough R. R.	580,000	.....	.....	580,000	.....	631,038	631,038	385,000	25,882
	110	162	The Connecticut & Passumpsic Rivers R. R. Co.	6,008,801	.....	.....	6,008,801	.....	3,557,173	3,557,173	2,500,000	2,278,101
	82	108	Northern R. R.	4,407,716	.....	.....	4,407,716	.....	3,068,400	2,809,126	3,068,400	.....
	72	85	Cen. & Clare. N. H. R. R.	2,250,000	(3-2 Lands) 10	2,250,000	.....	.....	1,131,206	1,172,182	412,400	500,000
	18	20	The Peterb. & Hills. R. R.	275,000	.....	.....	275,000	.....	209,298	209,298	45,000	165,000
	87	202	Connecticut Riv. R. R. Co.	10,805,669	.....	.....	10,805,669	.....	6,715,633	6,659,272	3,233,300	2,259,000
	353	546	The Con'd & Mont'l R. R.	18,259,103	.....	.....	18,259,103	.....	14,526,382	13,535,215	9,048,466	7,023,000
	40	56	Proprietors of Wells R. Br.	57,500	.....	.....	57,500	.....	.....	.....	6,300	15,000
	18	21	Concord & Portsmouth R. R.	1,550,000	.....	.....	1,550,000	.....	350,000	350,000	350,000	.....
	20	24	Suncook Valley R. R.	350,000	.....	.....	350,000	.....	348,199	348,199	341,700	.....
	21	30	Nashua & Acton R. R.	665,850	.....	.....	665,850	.....	300,000	300,000	300,000	.....
1914	21	30	Pemigewasset Valley R. R.	590,000	.....	.....	590,000	.....	588,632	588,632	541,500	47,370
	5	6	New Boston R. R. Co.	97,000	.....	.....	97,000	.....	87,005	87,005	84,000	3,005
	7	8	Franklin & Tilton R. R.	270,000	.....	.....	270,000	.....	271,755	270,622	265,600	6,155
	7	21	Low. & Andover R. R. Co.	640,000	.....	.....	640,000	.....	767,050	770,506	625,000	.....
	5	5	Kenneb. & Kenneb. R. R.	120,000	.....	.....	120,000	.....	65,000	64,846	65,000	.....
	24	37	Proprietors of Ports. Br.	45,000	.....	.....	45,000	.....	.....	.....	40,000	.....
	24	37	Manchester & Law. R. R.	1,900,000	.....	.....	1,900,000	.....	1,279,069	1,256,920	1,000,000	274,000
	394	858	Fitchburg R. R. Co.	46,537,309	.....	.....	46,537,309	.....	50,416,170	49,561,958	24,856,037	25,939,000
	5	6	Troy & Bennington R. R.	360,100	.....	.....	360,100	.....	236,953	235,019	150,800	.....
	59	178	Vermont & Mass. R. R. Co.	7,401,200	.....	.....	7,401,200	.....	7,005,384	2,672,439	3,193,000	772,000
	11	13	Propriet's of Con. Riv. Br.	50,000	.....	.....	50,000	.....	.....	.....	10,550	.....
	11	13	York Har. & B'h R. R. Co.	407,843	.....	.....	407,843	.....	316,003	325,639	300,000	.....
	24	46	Vermont Valley R. R.	2,450,000	11,921	.....	2,461,921	2,450,000	2,079,689	2,079,689	1,000,000	1,500,000
	24	49	The Sullivan County R. R.	2,100,000	.....	.....	2,100,000	2,100,000	1,264,057	1,264,057	500,000	357,000
	2,272	4,280	Boston & Maine R. R. (Total for Val. Docket)	106,670,814	132,590,532	.....	239,261,346	239,147,659	202,872,676	194,928,036	.....	.....
1915	15	16	Elkin & Allegheny Ry. Co.	335,046	.....	34	335,046	335,080	1,010,765	788,780	476,300	480,000
1916	18	21	Hill City Ry. Co.	301,104	.....	42,000	301,104	343,104	242,004	.....	50,000	200,000
1916	7	23	L. Ch. & Moriah R. R. Co.	853,020	.....	.....	853,020	853,020	460,026	758,926	400,000	.....
1916	14	18	Middlet. & Un'v. R. R. Co.	389,847	.....	.....	389,847	389,847	609,875	597,028	150,000	440,000
1916	57	64	Tallulah Falls Ry. Co.	1,808,822	.....	132	1,808,822	1,808,954	1,684,651	1,688,468	323,400	1,519,000
1915	2	3	Northwestern Coal Ry. Co.	77,500	.....	.....	77,500	77,500	678,859	513,866	1,000,000	.....
	64	94	Mineral Range R. R. Co.	2,849,177	.....	1,030,018	2,849,177	3,879,195	3,317,151	3,084,814	1,500,000	2,306,391
1916	23	58	Hanc'k & Calu. R. R. Co.	775,000	.....	.....	775,000	.....	955,106	787,812	350,000	325,000
	87	152	Mineral Range R. R. Co. (Total for Val. Docket)	2,849,177	.....	1,030,018	3,624,177	3,879,195	4,272,257	3,872,626	.....	.....
1916	8	9	Bay Point & Clay. R. R. Co.	136,000	.....	2,000	136,000	138,000	225,299	.....	150,000	.....
1917	2	6	The Troy Union R. R. Co.	1,082,305	1,741	.....	1,084,046	1,082,305	1,195,761	1,165,867	30,000	97,390
1916	11	12	Augusta Northern Ry.	140,576	.....	.....	140,576	140,576	178,609	.....	.....	165,750
1916	77	89	Danville & West. Ry. Co.	1,978,347	.....	780	1,978,347	1,979,127	2,082,667	.....	368,600	2,297,774
1916	15	35	Will'n & Pond Cr. R. R. Co.	1,222,044	.....	.....	1,222,044	1,222,044	1,247,947	.....	50,000	1,453,038
1916	4	10	Augusta Belt Ry. Co.	95,000	.....	.....	95,000	95,000	73,127	.....	65,000	6,147

Note 1.—Italics ours in these tabulations. Valuations are not being made by systems.

Note 2.—Items in "Capitalization" column should not be totaled, as some duplications are present.

Note 3.—Where a number of carriers are included in one valuation docket the details of the property "Used but not Owned" are not in all cases set up in the name of the owner, but the total amount is included in the totals for this classification.

Note 4.—The figures in the column, "Accounting Section's Restatement," represent the amount reported by the Commission after an examination of the carriers' books, and an attempted restatement of Account 701 in conformity with its present accounting rules and methods. This column should not be totaled.

Note 5.—Unit prices used in estimating cost of reproduction new and cost of reproduction less depreciation are those termed normal prices as of June 30, 1914.

†These figures are very close approximations. A small amount of undivided joint mileage is included in the mileage of some of the joint owners and not allocated. To this extent a slight duplication of mileage occurs in the totals.

THE DELAWARE & HUDSON COMPANY is reported a loser to the amount of \$50,000 by a flood in the valley of the Lackawanna river, Pennsylvania, on June 3 and 4, the total losses of which are said to aggregate more than a million dollars. The loss of the Hudson Coal Company is given as \$600,000.

J. S. DENNIS, head of the natural resources department of the Canadian Pacific, has been engaged by the provincial government of British Columbia to make a survey of the natural resources of the territory adjacent to the Pacific Great Eastern Railway. This

line is now in operation from Squamish, B. C., at the head of Howe sound, northeast to Quesnel, in the heart of the Cariboo district, and has recently been graded between Quesnel and Prince George, on the Grand Trunk Pacific. The government is considering a proposal to build from Prince George into the Peace river country to a connection with the Edmonton, Dunvegan & British Columbia, which is now being extended from Spirit river, Alberta, to Pouce Coupe, B. C. Reports on the engineering, operating and traffic conditions of the P. G. E. have already been submitted.

Report on Collision Near Plains, Kan.

THE INTERSTATE COMMERCE COMMISSION has issued a report on a collision of passenger trains—No. 311 westbound and No. 312 eastbound—on the Chicago, Rock Island & Pacific near Plains, Kansas, on April 19, in which both enginemen were killed and four passengers and two employees were injured.

Improper handling of a train order at Kismet, seven miles west of Plains, is given by the inspector as the cause of the collision, which occurred about 2 a. m. in clear weather; yet both locomotives had electric headlights burning brightly and the line of road is perfectly straight for seven miles or more.

Each train consisted of a locomotive and three cars and was moving at something between 20 and 40 miles an hour. In each train the baggage car was telescoped by the tender for the full length of the tender; but the passenger cars were not damaged. The locomotives were damaged but remained upright. The firemen were thrown off, or jumped off, and were seriously injured. Each of them said that he knew nothing of the approach of the opposing train until he felt the application of the air brakes, at which time the opposing train was only a few rods distant; and neither could give any reason for the failure of the enginemen sooner to set the brakes.

The enginemen and firemen of both trains, before departing from Plains and from Kismet, respectively, observed the headlight of the opposing train and in each case commented upon the fact; and thought that the opposing train was waiting at the next station.

The inspector's account of the sending and delivery of the train orders is long and filled with many details. The order in question was No. 211, form 31. Orders on this form are made complete as soon as repeated, and the station operator is responsible for getting the conductor's signature. When the train-order signal is displayed, a train must not leave without a clearance card specifying the numbers of the orders which are delivered with it; and if the orders are on form 31, the operator must repeat this clearance card, including the numbers of the orders, to the dispatcher before delivering it; but with form 19 this repetition is not required.

The trouble occurred at Kismet. Eastbound stock train, extra No. 1913, was waiting at Kismet for train No. 311.

To help 1913, Train Dispatcher Forsyth had telephoned to Operator Noland, at Kismet, at his house, requesting him to report for duty at the station. When Noland reached the office, about 2 a. m., order No. 210, form 31, was issued providing that trains 1913 and 311 should meet at Plains. Forsyth next issued order No. 211, form 31, changing the meeting point of the passenger trains from Kismet to Plains, and permitting the freight to run ahead of No. 312 from Kismet to Plains. Then, a little later, he sent a message to the operator at Kismet to regard this last order as form 19; and this allowed Noland to deliver the order to No. 312 without having his clearance card approved by the dispatcher.

After order No. 211 was delivered, the conductor of the freight decided that he must go behind the passenger train. When the dispatcher learned this he issued order No. 212, form 31, addressed to the operator at Plains, and to the operator and the freight at Kismet, annulling orders 210 and 211; but in the meantime train 312 departed, expecting to meet train No. 311 at Plains, according to order 211.

Operator Noland said that in view of the fact that order No. 212 was addressed only to himself and to the freight he overlooked the fact that it also affected train No. 312. Not until he reported the departure of train No. 312 was the error discovered. The train dispatcher and Operator Noland gave conflicting statements as to the conversations which they

had held, and it appears that Forsyth intended to have order No. 211 delivered as form 19 only to the freight; for the passenger train he expected it to be delivered as a 31 order; and it did not occur to him that he had authorized it to be delivered to both trains as a 19. The operator at Plains received the annullment order just in time to deliver it to No. 311 at 2:26 a. m.

As to whether the message changing the form of order No. 211 confined this authority to the freight train, the dispatcher and the operator tell conflicting stories; but whether the operator did or did not make an error in copying the message, the changing of the status of the order by any other method than the transmission of a new order, was entirely unwarranted; therefore it is held that the dispatcher must bear the responsibility for the collision. The informal message was irregular, but the operator and the passenger conductor are not criticized for acting on such instructions from the dispatcher, their immediate superior officer.

Had Noland been alert he probably would have discovered the dangerous situation; but if his mind was not bright the condition is held to be explainable by the fact that he had been called out of bed that night once before, at 11 o'clock. His regular tour of duty is from 8:30 a. m. until 5:30 p. m., with one hour out for luncheon. When Noland reached his office at two o'clock he failed to light the lamp in the train order signal, or to display any light indicating that he had train orders to be delivered. This practice of awakening operators from their sleep is denounced as dangerous.

The report concludes with the statement that the dispatcher was a telegrapher of experience. He had been train dispatcher about 10 months.

I. C. C. Air Brake Hearing

Adjourned Until July

DURING THE SECOND WEEK of the hearing, Spencer G. Neal, chief engineer, Automatic Straight Air Brake Company, was on the stand for two days. He was followed by J. E. Grant, special agent of the Bureau of Explosives. Other witnesses called by the Automatic Straight Air Brake Company were H. B. McFarland and George L. Fowler, consulting engineers, and A. J. Schuyler, general car inspector, Virginian Railway.

The first two witnesses presented by the Westinghouse Air Brake Company were W. S. Bartholemew, vice-president, and George W. Wildin, general manager. They were followed by T. W. Dow, Erie; J. F. Gannon, New York Central; P. J. Langan, Delaware, Lackawanna & Western; and George E. Terwilliger, New York, New Haven & Hartford. The Westinghouse Air Brake side of the case was closed with evidence by Prof. S. W. Dudley, Yale University (formerly chief engineer W. A. B. Co.), and C. C. Farmer, director of engineering, W. A. B. Co. The only witness for the New York Air Brake Company was B. J. Minnier, local manager.

Others who appeared were J. H. Phillips, who described a metallic hose connector, and W. H. Sauvage, who requested permission to describe his air brake system and also the automatic slack adjuster made by the Gould Coupler Company.

The hearing was adjourned on Monday night, May 29, to a date to be fixed some time in July. This recess will enable the railroads to go over the record and prepare their case.

THE CHICAGO GREAT WESTERN has moved its division headquarters in St. Paul from the Commerce building to its new building at Robert and Wood streets.

Shifting of Bridge Pier Stopped After 35 Years

Interesting Story of Efforts to Abate Movement Under Large Span, Caused by an Unstable Hillside

By M. F. Clements

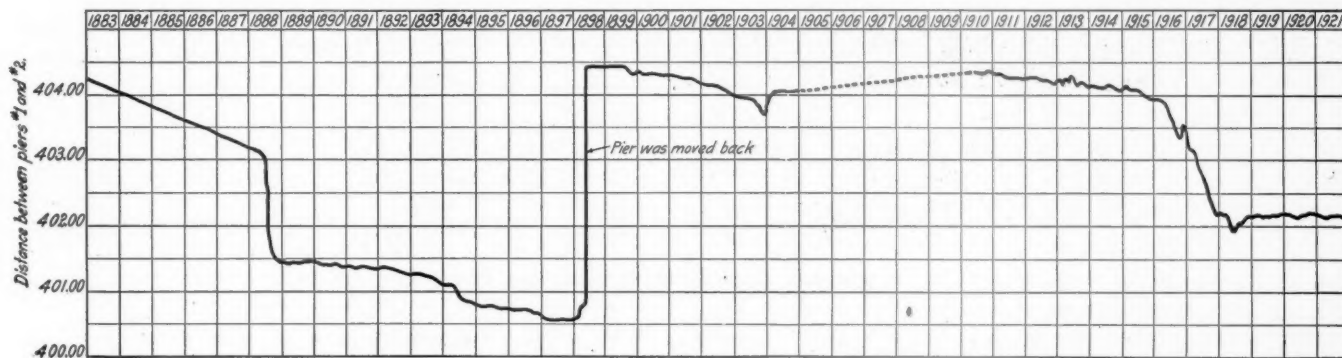
Bridge Engineer, Northern Pacific, St. Paul, Minn.

THE NORTHERN PACIFIC was built into Bismarck, Dakota territory, in 1873 and was constructed west from Mandan in 1880. In 1881 the location of a bridge over the Missouri river was fixed, and the substructure started and in 1882 the bridge was completed. The bridge, as first built, consisted of three 400-ft. through pin-connected whipple truss spans, two 113-ft. deck pin connected spans and 1,500 ft. of timber trestle. The trestle was filled later.

Long spans were selected on account of the absence of rock in the river bed as a foundation for the piers, the government requirement for a clearance of 50 ft. above water level and conditions which exist at the time the ice breaks up in the river. Cross sections of the Missouri river a number of miles north and south of this crossing show a bluff on one side of the river and a flat on the opposite side, with a bluff beyond. At the Bismarck bridge the bluff is on the east side, and a low flat on the west side extending into the valley of the Heart river at Mandan. The bed of the river consists

Portland cement concrete footing. Its base as first constructed was 50 ft. by 24 ft. and 18 ft. thick. The pressure on the base was 5,690 lb. per sq. ft. The excavation was carried down through a hard, dense blue clay for the full depth without the use of a pump, although the bottom of the base was 16 ft. below the water surface.

Practically from the date of completion of the bridge Pier I has moved intermittently toward the river. There was no settlement in the pier which could be measured and the whole movement was horizontal. A chart shows the total movement of the pier from 1883 to date. From 1883 to 1888 the measurements were not made accurately for individual months or years. From 1888 to 1905 the measurements were made at the ends of trusses with no adjustment for temperature. The record from 1905 to 1910 is incomplete, but in 1910 measurements were taken with a tested tape and the change in method of measuring accounts for the eastward movement recorded on the chart. The expansion



Graphical Record of the Movement of the Pier

of a fine sand and silt on top of a hard blue clay which lies from zero to 100 ft. below the surface of the water.

Unusual ice conditions exist, caused by the different climatic conditions on the head waters of the Missouri and Yellowstone rivers. In the spring of the year the Yellowstone and the Missouri above the mouth of the Yellowstone break up two or three weeks in advance of the Missouri river at Bismarck and the result is a succession of ice gorges and accompanying high water. The ice gorges, which sometimes measure 20 ft. in depth, cause a very heavy scour in the sand bed.

The piers supporting the 400-ft. spans were founded as follows:

- Pier I on blue clay 16 ft. below low water.
- Pier II on blue clay 48 ft. below low water.
- Pier III on blue clay 47 ft. below low water.
- Pier IV on pile foundation 6 ft. below low water

Immediately after the completion of the bridge, the Bismarck waterworks was established. A pumping plant was built near the river bank, adjacent to the bridge, and a pipe line was placed in a tunnel just east of the approach span and leading to reservoirs placed on the bluff east of the bridge. The reservoirs were completed in 1886.

Pier I was constructed of granite masonry resting on a

rollers for the original east span were on Pier II and wood blocks were inserted between the spans to prevent movement early in the life of the bridge.

The movement of Pier I was gradual from 1883 to 1888, when a very marked increase was noted. In August, 1888, it became necessary to remove the wooden blocks between the spans on Pier II and move the center and easterly spans westward. The east span was moved 17¾ in. at one time and a few weeks later was moved an additional 3 in.

Situation Became Serious in 1888

In September, 1888, a frame bent was built on the east side of the pier to carry the approach span, and in August, 1888 the supply pipe between the pump house and reservoir of the Bismarck waterworks pulled apart and the bluff was flooded with water. The movement of the pier became serious that year and an attempt was made to stop it.

It was assumed that the movement occurred on a plane surface at some point below the bottom of the pier and plans for stopping the movement have been based on that assumption. The original soundings located an 18-in. vein of lignite coal about four feet below the base of the pier and it was assumed that the surface of the coal was the plane of sliding.

The plan suggested for stopping the movement of the

bluff was to construct large concrete dowels which would extend above and below the plane of sliding and tie the upper mass to the lower. In addition, it was thought best to divide the slide by excavating a cut into the bluff, dividing the north side of the bluff, where the movement was greatest, from the south side. The excavated material, a total of 24,000 cu. yds., was deposited on the river side of Pier I to counteract the movement of the bluff.

In making the excavation for the concrete dowels, it was reported that directly on top of the coal was a slippery, muddy clay from $\frac{1}{2}$ to 1 in. thick. It was assumed that this substance lubricated the top of the coal so that the overlying material could slide. The dowels were located east of Pier I, 24 ft. and 30 ft. and 25 ft. and 40 ft. on either side of the center line. They are 25 ft. square and contain approximately 400 cu. yd. of concrete each. They were reinforced with railroad rails set vertically in the concrete. The bottom of the dowels were 12 ft. below the bottom of the pier.

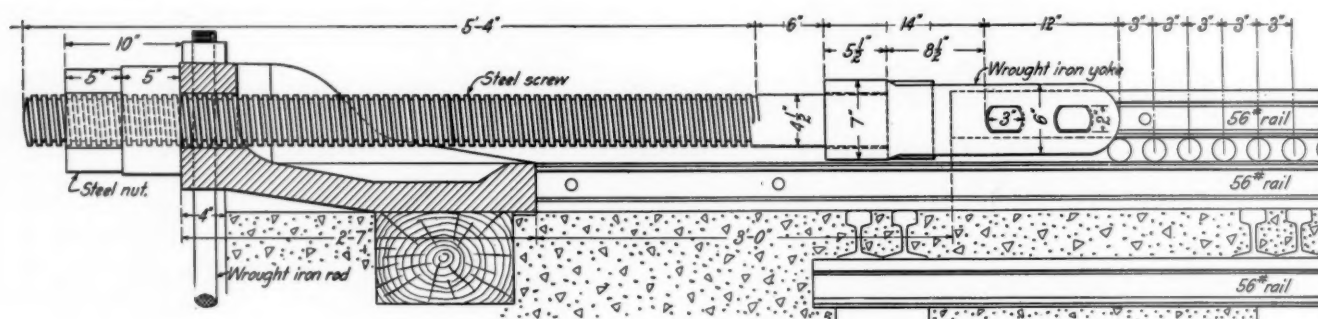
At this time, an effort was made to drain the water that collected in the crevices in the bank. On the completion of the work it was found that the pier continued to move, but it was assumed that such movement would stop when the material back of the dowels became thoroughly compressed. The assumption proved to be erroneous and the pier continued to move.

From 1888 to 1895 the movement was gradual. In 1895

erations and the method adopted for excavation beneath the footing of the pier consisted of tunneling.

The tunnels were driven under the pier in the direction the movement was to take place. The openings were 5 ft. 6 in. wide and 13 ft. deep and were 5 ft. apart. The bottom of the pier was smoothed off by stone cutters. Four 56-lb. rails were bolted together and placed in an inverted position under the pier in each section. The excavation in each section was filled with concrete and four 56-lb. rails, bolted together, were placed on the concrete so that the rails top and bottom were separated by 2-in. by 18-in. steel rollers with a clear space of one inch between them. The upper rails were filled with concrete before placing them and they were jacked into position and grouted to the masonry. Considerable difficulty was experienced in getting the rails to bear on all rollers and a maximum variation of $\frac{1}{32}$ in. was obtained. Five tunnels were driven in all, each having two sets of rollers, there being a total of 1,020 rollers. When the tunnels were completed, the space between them was excavated and filled with concrete up to a point 2 ft. 6 in. from the bottom of the pier, its weight being transferred to the rollers. One-inch wood blocks were placed between the rollers until the pier was ready for movement.

The movement was effected with the aid of ten screws, $4\frac{1}{2}$ in. in diameter and with a $\frac{7}{8}$ in. pitch. One end of these screws was bolted to the upper rails and the other to steel nuts $9\frac{1}{2}$ in. in diameter, on which were fitted cast iron



Screw Rig Used to Move Back the Pier

it became evident that the leakage of water from the Bismarck waterworks reservoirs on the bluff was causing trouble. A series of tests indicated a leakage of 60,000 gal. daily and test wells showed that the water was collecting in hidden cavities and drains were constructed to carry it to the river. In 1897 three pipes were sunk to determine the plane of sliding and the rate of movement and the pipes broke from the movement below the bottom of the pier. In that year the movement had reached a maximum of 44 in., the approach span was supported on cribbing built up from the ground, and the 400-ft. span was resting on the edge of the bridge seat.

Decide to Move the Pier Back

To make the pier serve again as a support for both steel spans and correct a further movement, it was decided to rebuild the pier or place a new footing under the old and move it back to its original position. It was assumed that a pier of greater depth which penetrated the material below the lignite coal would be permanent. Consideration was given to various means of replacing the pier. If the pier was rebuilt, it meant placing both spans adjacent to it on false-work. A plan for moving the pier was adopted and the work was finally completed along those lines.

The material on which the pier was founded consisted of a hard blue clay. Laboratory tests on one-inch cubes, when dry, indicated that it had a compressive strength of 58 lb. per sq. in. when dry. The material was ideal for tunnel op-

wheels 27 in. in diameter, equipped with sockets for inserting levers.

The first concrete was placed in January 1, 1898, and it was completed on May 29. At the time of moving the pier, the wooden blocks between the rollers were removed and force was applied to the hand wrenches. It required two minutes to move the pier $\frac{1}{4}$ in., six minutes to move it 1 in. and nine minutes to move it 2 in. A cave then occurred in the bank on the west side of the pier and the pressure from the earth completed the movement of the pier. In 12 min. it had moved 5 in. and it continued unaided, stopping at approximately the original location. After the movement it was found that 163 rollers, or 16 per cent of the total were loose. These were removed and all spaces under the pier filled with concrete. The west end of the approach span was placed on rollers so that the pier moved under it.

The original height of the pier was $82\frac{1}{2}$ ft. The new height is $95\frac{1}{2}$ ft. The total load on the rollers was estimated at 8,172,000 lb., or 532 lb. per in. of rollers. The concrete in new footing totaled 840 cu. yd.

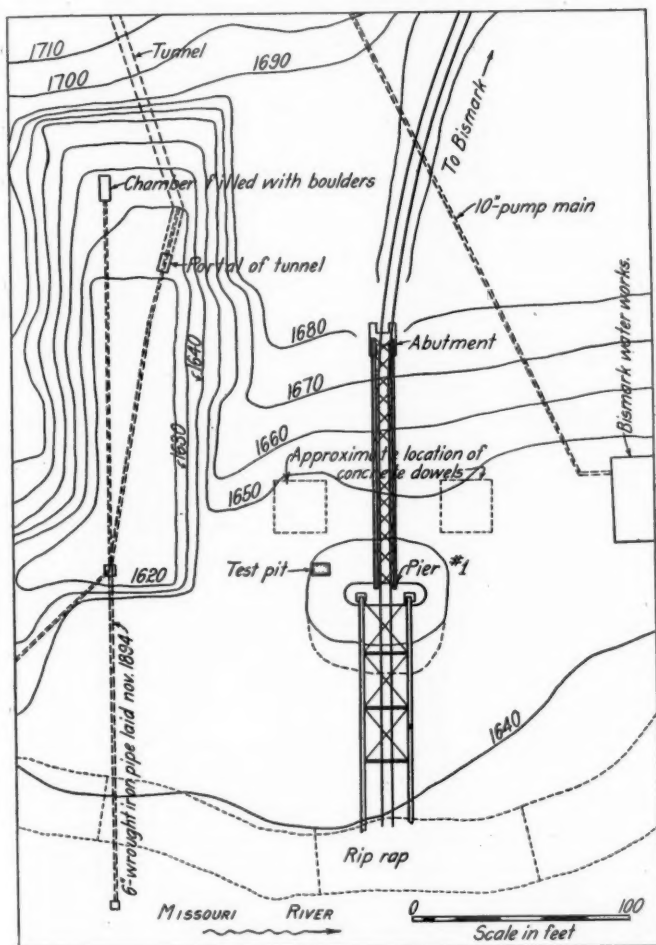
The Movement Continued

Although the new pier was of greater depth and penetrated the coal seam, the movement continued. In 1899 it was $\frac{3}{16}$ in. and in 1903 it had increased to $9\frac{11}{16}$ in. The excavation around the pier remained open for a time, but it gradually filled up so that the pressure of the moving bluff acted against it. To relieve the pressure, an excavation

was again made in 1904, when the pier readjusted itself and moved back $5\frac{1}{8}$ in., leaving a total displacement at the top of $4\frac{9}{16}$ in. A test pit sunk at the south end of the pier to the junction of the new and the old footings exposed a crack between them and it was assumed that the footing course had not been moved.

In June, 1903, a test disclosed a leakage of 100 cu. ft. per hour in the water company's reservoirs. The supply pipe to the reservoirs passes under the track east of the bridge in a tunnel. A movement of the bluff caused the pipe to pull apart in September, 1903, and the leakage found its way into cracks in the hillside and a movement of $2\frac{1}{2}$ in. in six weeks was noted.

In the winter of 1903-1904 a drainage system was in-



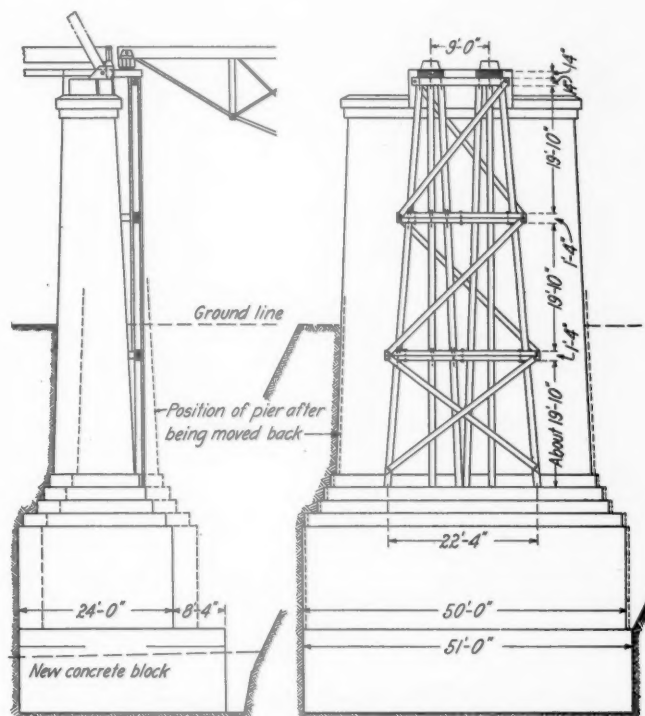
Contour Map of the Pier Site.

stalled which consisted of two lines of perforated pipe extending from the surface and ending in tunnels built into the bluff. The pipes were to collect the water leaking from the reservoirs and carry it away through a drainage system into the river. The total length of main tunnel was 1,180 ft. and extended from the foot of the bluff on the north side of the track to a point near the reservoir, where it branched off on either side. The tunnel was lined with timber and when first built, the bents were four feet apart, with plank lagging behind. There were originally 180 bents in the main tunnel, 132 in the north branch and 114 in the south branch. In making repairs, intermediate bents were placed and in certain parts they are now together, so that lagging is not required.

Between 1904 and 1911 there was practically no movement in the pier. In the meantime the superstructure had become too light for heavy power and new steel designed for E-52 loading was placed in 1905. All of the old masonry

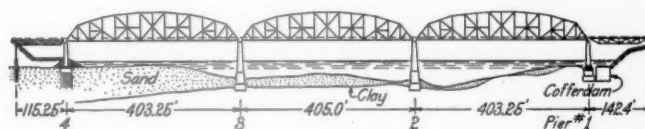
except the east abutment was used to support the new steel but the sliding of the bank made it necessary to lengthen the east span and it is now supported on piling capped with a timber grillage. The slope beyond the steel span is taken care of by a 15-ft. timber span.

For a number of years after 1904 the open pit back of Pier I was maintained, but it finally became filled with wash material from the slope and pressure was again brought against the pier. Previous to 1904 all measurements of move-



Pier 1 Before and After Moving Back

ment were taken from the steel work. After the new steel was placed no movement was detected in the roller bearings and a record of movement was not maintained, but in 1912 it was decided to institute monthly measurements made along standard lines with adjustments for temperature. From 1912 to 1917 Pier I moved 12 in. In 1917 it moved 12 in.



General Elevation of the Bridge Showing Conditions Since 1917

more. During the winter months the pier was stationary, so that in 1917 the movement exceeded one inch per month.

Movement Again Serious

It became evident that something would have to be done to stop the movement, or a support provided for the spans meeting on the pier. The expansion bearings of both spans rest on Pier I and the movement was taken care of by adjusting the rollers. Plans were prepared for building a new pier east of the present one and joining the two at the top with a concrete girder, which would provide a flat surface 30 ft. long that could move under the supports of the span.

The excavation for such a pier was made, requiring a pit 50 ft. by 40 ft. for the full depth of the foundation. By constructing a cofferdam in such a way that pressure does not bear against the existing pier, it has remained stationary

and the pit will be left open during the life of the timber in the cofferdam. This method of maintaining the pier has proved very satisfactory. There has been no movement from December, 1917, to date. The question of building a new sliding pier is still open and future developments will determine whether it is best to build such a pier or renew the cofferdam.

The early methods used to maintain the pier were based on the assumption that the bluff is moving on a plane surface and that the movement has been aggravated by the leakage of water from the city reservoirs. There is no doubt that the bluff is moving and that the water, either from springs or the reservoirs, has had something to do with the rate of movement, but the theory that the movement is on a plane surface is probably erroneous. The movement of the bluff is greatest at the surface and decreases to zero somewhere near the bottom of the pier. This is clearly shown by the fact that a 16-ft. timber span at the east end of the 140-ft. span moved about 14 ft. from 1904 until 1917 and the bottom of the pier moved 26 in. during the same period of time.

The movement has been zero in the winter months, with the greatest monthly movement immediately after the spring break-up of ice. It is probably caused by the deep scouring of the sand which, for short periods, is scoured to the surface of the clay and deposited again as the high water recedes. During the time the pressure of the sand is removed, the bluff seeks a new position of equilibrium by moving towards the river. The movement is in the nature of a flow with the greatest movement at the surface. Efforts to stop the movement of the bluff have proved to be of no avail and the problem of maintaining the pier can only be met by removing the pressure against it.

Railroad Legislation in Congress

WASHINGTON, D. C.

THREE RAILWAY BILLS were passed by the House of Representatives last week but practically no progress is being made toward action on the various bills to amend the Transportation Act, which have been rather numerous and which have been the subject of extensive hearings before House and Senate committees; and it now appears certain that no action will result at this session. The bills passed by the House were the valuation bill, already passed by the Senate, to strike out of the valuation act the requirement that the Interstate Commerce Commission report the cost of condemnation or of purchase of railroad lands; a bill to punish commercial bribery, which includes penalties against bribing switchmen, etc., to furnish cars, and an amendment to the law which deals with freight pilfering so as to provide that the interstate character of a shipment may be established by waybill evidence. The latter two bills have not yet been passed by the Senate.

The Senate committee on interstate commerce held another meeting on June 3 to discuss the Capper and Nicholson bills designed to repeal the rate provisions of the transportation act and restore the powers of state commissions; but it took no action and it is understood that members of the committee have decided informally to make no report on these bills. Senator La Follette has given notice that he proposes to move that the committee be discharged from the consideration of these bills so that they may be brought up on the floor of the Senate. The House committee has held leisurely hearings on the Hoch and Sweet bills, of a similar character, and on Tuesday heard Bruce Scott, of the Chicago, Burlington & Quincy, as one of the railroad witnesses in opposition to the bills, but a majority of the members of the committee show no desire to hurry the proceedings. The committee has decided to report out a bill providing for reduced rate mileage

books but it is also understood that it is not intended to hasten its passage.

The House on June 2 passed by a vote of 49 to 18 the bill previously passed by the Senate, S. 539, to strike out of the railroad valuation act the requirement that the Interstate Commerce Commission ascertain and report "separately the original and present cost of condemnation and damages or of purchase in excess of such original value," of lands. This was substituted for the House bill, H. R. 6043. The legislation was requested by the Interstate Commerce Commission and the state commissions. Representative Merritt of Connecticut vigorously opposed the bill on the ground that it is an attempt to settle a judicial question by legislation and he pointed out that under the present law the commission is required only to take the information into consideration.

Until directed to do so by the Supreme Court in the Kansas City Southern case the commission had not included in its valuation reports any figure representing the excess cost of acquisition of land, stating that it was impossible to give anything more than an unreliable estimate of what it would now cost the railroads to acquire their lands. Since the decision it has been reporting such a figure, based on a system of multiples applied to zones of land of various kinds. There has been no evidence, however, that it has given much weight to the figure so ascertained in its consideration of the elements on which it bases its findings of final value, and shortly after the court decision it asked Congress to relieve it from reporting the excess cost. It has been argued, therefore, by those who favored the bill just passed, that it was useless to require the commission to make such a finding; but the railroads, at the hearings on the bill, insisted strongly that such a figure should be stated by the commission for the benefit of what weight might be attached to it in judicial proceedings affecting a valuation, and that without such a finding a court might delay the valuation work by ordering a report to be made over again.

The bill, H. R. 10,768, passed by the House on June 1, to punish the larceny of freight in interstate commerce, amends the act of February 13, 1913, to provide that "to establish the interstate or foreign commerce character of any shipment in any prosecution under this act the waybill of such shipment shall be prima facie evidence of the place from which and to which such shipment was made." The purpose of the bill is to make it unnecessary to call witnesses from long distances to prove the interstate character of the shipment.

The House on June 1 passed without discussion the bill, H. R. 10,159, to further protect interstate and foreign commerce against bribery and other corrupt practices, without a debate.

The mileage book bill reported was that passed by the Senate, which leaves the rate per mile to be determined by the Interstate Commerce Commission, with an amendment authorizing the commission to require railroads to issue scrip coupons, leaving to the determination of the commission the amount of mileage to be contained in mileage books and authorizing the commission to exempt any carrier from the provisions of the act if conditions warrant such action. Also, the word "interstate" was taken out of the bill.

Representative Newton of Minnesota has introduced a bill, H. R. 11,822, to amend section 15-a of the transportation act so as to leave out any provision for a definite percentage of return but stating that the carriers are entitled to the opportunity of earning a fair return providing the commission shall have reasonable latitude to modify any particular rates which it may find to be unjust or unreasonable.

TEN THOUSAND HORSES, or more, are sought in western Canada for shipment to Russia. Albert Champagne, ex-member of the Dominion Parliament, is expected to tour the provinces shortly, for this purpose, acting for a British syndicate.

Shopmen's Wages Cut Five to Nine Cents an Hour

Labor Board Authorizes Lower Rates of Pay for Mechanical Forces Effective July 1

THE RAILROAD LABOR BOARD, on June 6, authorized wage reductions of seven cents an hour for machinists, boiler makers, blacksmiths, metal workers, electrical workers, carmen (except freight carmen), molders, cupola tenders, and coremakers (including those with less than four years' experience), regular and helper apprentices and helpers of all classes; nine cents an hour for freight carmen, and five cents an hour for car cleaners. The decreased rates of pay go into effect on July 1, simultaneously with the decreases previously ordered in the rates of pay of maintenance of way employees. The Labor Board also found that the duties and responsibilities of shop supervisory forces are such as not to justify a decrease in the wages of this class of employees at the present time.

In analyzing the wage reductions so ordered, the board said in part:

The Labor Board is of the opinion that after the reductions made under this decision, shop employees on the railroads will still be receiving, as a rule, a wage in excess of that paid to similar employees in other industries.

The decreases have the effect of maintaining the uniform rates for the respective classes which were continued by Decisions Nos. 2 and 147. It will be noted that the differential between "freight carmen" and the other classes has been increased two cents per hour by providing a decrease of nine cents per hour for this class as compared with seven cents per hour for the other crafts named. The Board recognizes that there are certain branches of carmen's work that require the service of skilled mechanics, and for the classes so considered this decision provides a decrease of seven cents per hour. It is, however, believed that the work of "freight carmen" is not of a character which requires the service of men as skilled as in the other branches of work coming within the scope of carmen's work; therefore, the differential between the minimum rates of "freight carmen" and of the other shop crafts under this decision will be increased to seven cents per hour, which it is felt is just and reasonable considering the character of service performed and the rates of pay and working conditions applicable to this class of employees prior to the issuance of any wage order by the United States Railroad Administration.

It will be further noted that no decrease is provided herein for "supervisory forces." The Board, after due consideration, feels that the duties and responsibilities of these positions are of such a character as to warrant the maintenance of the present rates.

The "Real" Wages of Machinists and Carmen

Based upon the evidence before the Board, the statistical department of the Board has made a study of the comparative purchasing power of the wage herein fixed for certain of the shop crafts and the purchasing power of the wage paid such employees on the railroads in December, 1917, immediately prior to government control of the carriers; in January, 1920, just prior to the termination of federal control; on May 1, 1920, the effective date of Decision No. 2; on July 1, 1921, the effective date of Decision No. 147; and in March, 1922.

The results of these studies are as follows:

AVERAGE HOURLY RATES		
	Machinists	Carmen
December, 1917	50.5c	37.7c
January, 1920	72.3c	68.0c
May, 1920	85.3c	81.0c
July, 1921	77.3c	73.0c
Under present decision.....	70.3c	64.4c
PERCENTAGE OF INCREASE IN AVERAGE HOURLY RATES OVER DECEMBER, 1917		
January, 1920	43.2%	80.4%
May, 1920	68.9%	114.6%
July, 1921	53.0%	93.6%
Under present decision.....	39.2%	70.8%
INCREASE IN COST OF LIVING OVER DECEMBER, 1917		
January, 1920	40.0%	.....
May, 1920	59.0%	.....
July, 1921	26.7%	.....
March, 1922 (latest available Government data)....	17.2%	.....

PERCENT OF INCREASE IN PURCHASING POWER OF EARNINGS OF SUBSEQUENT DATES AS COMPARED WITH DECEMBER, 1917

January, 1920.....	2.3%	28.9%
May, 1920	11.1%	41.2%
July, 1921	20.8%	52.8%
Under present decision.....	18.8%	45.7%

Although average hourly earnings of machinists are below the earnings after Decision No. 2 was applied by 15 cents per hour, their value is 6.9 per cent greater due to the decrease in the cost of living.

The average hourly earnings of carmen are below the earnings after Decision No. 2 was applied by 16.6 cents per hour, but their value is 3.2 per cent greater for the same reason.

The cost of living figures set out in the foregoing tables have been compiled from the reports of the United States Department of Labor and are for the latest date for which such data are available.

Application of the New Wage Scales

The decision of the board, as outlined above, is effective on those roads and with respect to those particular classes of employees that were specifically named in the submissions made to the board by the various railroads and the various organizations. The decision includes a long list of railroads, indicating in each case the classes of employees affected.

The decreases specified in the decision are to be deducted on the following basis:

- For employees paid by the hour, deduct the hourly decreases from the hourly rates.
- For employees paid by the day, deduct eight times the hourly decrease from the daily rates.
- For employees paid by the month, deduct 204 times the hourly decrease from the monthly rate.

Labor Group Append Lengthy Dissenting Opinion

A lengthy dissenting opinion signed by the three labor members on the board, A. O. Wharton, Albert Phillips, and W. L. McMenimen, was attached to the board's decision, this group summarizing the reason for their dissent as follows:

(1) The wage structure for the transportation industry which is being built up in this series of decisions rests upon no consideration of the human needs of the employees affected. These human needs were set forth by data and witnesses at the recent hearings with compelling force. The majority have not considered the evidence on this point, nor have they met the issue raised. Their failure to give this, the most vital element, consideration and to inform the public impartially on the subject, vitiates the whole decision.

(2) The evidence submitted in the present hearings tended to show that an income based on the 77-cent per hour rate does not enable representative shop-craft families, with the most economical management, to procure enough food for their families, or to maintain their own efficiency. This evidence included a tentative standard of living expressed in terms of goods and services to which mechanics naturally feel themselves entitled. At the current prices an increase in pay would be necessary to enable these employees to secure such a standard. Without any attempt to show that the employees affected by this decision are not entitled to such a standard, and further without any attempt to show how families can make good the food deficits, the majority decision further reduces the ability of these employees to meet the needs of their families. The undersigned dissenting members feel that the Labor Board must initiate a study which shall determine the amount necessary to meet some recognized standard, that it must use the results as a basis for its decisions, and that it must through this decision transmit this information to the public.

(3) The rates of pay contained in the award, being insufficient to provide for a family of five, tend to substantiate the position taken by the management to the effect that wages need not be established with reference to the needs of a family of this

size. The most careful and comprehensive investigation on this subject shows that wages which do not provide for a family of that size mean that 72 per cent of all children in families receiving this wage will be inadequately provided for during at least five critical years of their lives. Permanent traces of this malnutrition will be left on the physique of the next generation.

(4) The failure of the majority to consider the real merits of the case has created a wage structure which has no relation to any existing standards. Based on evidence in possession of the Labor Board, the minimum for the industry should have been nothing less than fifty cents per hour. Without, for the moment, questioning the justice of the differentials resulting from the majority decision, this would place the mechanics' rate at least as high as 87 cents per hour.

(5) The ordering of a larger decrease in the case of freight carmen is unjust and wholly inconsistent with former decisions of the Labor Board. In ordering such a change, the majority disregard the fact that any difference in skill which may exist has been already provided for in the 5 cent differential which dates from the days of the United States Railroad Administration. They also disregard the fact that under the classification rules of the Board freight carmen are mechanics and as such are entitled to the minimum rate for mechanics.

(6) The rates of pay established in this decision will mean to the employees affected lower purchasing power and lower standards as compared with pre-war years. From December, 1917, to the present decision, inclusive, the maintenance of equipment forces have suffered a constant deficit, their wages at all times failing to keep pace with living costs. The figures cited by the majority to the contrary effect are a misrepresentation of the true facts as to the relative earnings involved.

(7) The savings to the railroads, as a result of the decisions of the Labor Board and of the lay-off of men, far exceed anything justified by the savings to the public in reduced rates. The employees covered by this decision alone have had their payroll cut to the extent of \$371,817,996 per year, as hereinafter set out, based on number of employees in service as of December, 1917, while the total payroll cuts due to decisions alone total half a billion dollars. During the last six months of 1921, the total payroll slash, including the lay-offs, was running at the annual rate of \$1,300,000,000. This diminished purchasing power of the employees as a group appears in strong contrast with the increasing prosperity of the railroads noted by the Interstate Commerce Commission in its recent opinion and by the financial press.

(8) The increasing antithesis between profits and just wages will result in lower morale among the railroad employees; thus the present wage reductions will not result in economies and will prove contrary to the real needs of efficient and economical management.

(9) The majority have failed to carry out the function for which the Labor Board was created. Such decisions, containing no explanation of the process by which the majority arrive at the rates established, give the public an impression that these rates are not founded upon a careful consideration of the facts. A strong contrast is presented with the decisions of other wage boards, not only in this country but in other parts of the world, as well as with the decisions of the Interstate Commerce Commission, which show the public at considerable length how the evidence was weighed and the conclusions reached.

In the light of the Transportation Act it is the clear duty of the Board: First, to act as a constructive, impartial body in providing means whereby railroad employees can have their legitimate human needs satisfied without recourse to stoppages; and, second, to enlighten the public so that through the disordered state of unregulated industry and the confusion of propaganda, they shall be able to see the real facts as they affect the body politic. The decision in question fulfills neither of these duties.

Board Estimates "Savings" at \$59,669,547.32 a Year

There followed an extensive analysis of the reasons for the dissenting opinion, including a discussion of workers' budgets, the basis for the present wage structure, an alleged lack of justification for the majority decision, the purchasing power of the employees involved, the present financial situation of the carriers and their ability to pay higher wages, the effect of the decision on the morale of the employees and the proper functions of the Railroad Labor Board as conceived by the minority. The length of these discussions and the involved manner in which they are presented, prohibit their presentation either in whole or in part, at this time. However, the basis for the dissenting opinion is completely outlined in the portion quoted above.

A memorandum prepared by the statistical department of

the Labor Board estimates the savings that will accrue to the carriers per year by these decreases, based on the hours worked during December, 1921, and January and February, 1922, will be \$59,669,547.32. The same statement shows that after the new rates are placed in effect, the rates of pay of supervisory forces will be five cents above their rates on February 29, 1920, the rates of pay of skilled workers (except freight carmen) and regular and helper apprentices and helpers of all classes, will be two cents per hour below their rates on February 29, 1920, the rates of pay of freight carmen will be four cents an hour below their rates on that date and the rates of car cleaners will be ten and one-quarter cents an hour below their rates on that date.

Labor Leaders Meet at Cincinnati to

Formulate Future Policies

With wage reduction orders involving practically all railway employees in the maintenance of way and mechanical departments and effecting as they do a majority of railway employees, scheduled to go into effect on July 1, interest is now centered in Detroit where the Brotherhood of Maintenance of Way Employees and Railway Shop Laborers has its headquarters and in Cincinnati, where all of the railway leaders except those of the train service organizations gathered on June 6 to formulate their future policy toward the recent decisions of the Labor Board.

The latest reports from Detroit indicate that the maintenance of way brotherhood leaders are carrying out their announced intention of submitting a strike ballot to the membership as the result of the Labor Board's wage cut order last week. The returns on this strike referendum will be complete by July 1, E. F. Grable, president of the brotherhood, said. The attitude of these employees toward wage reductions was indicated at a meeting of general chairmen representing these employees on the western railroads who met recently at Chicago and voted unanimously to reject the Board's decision. Approximately 75 union officers representing 18 railroad systems centering in Chicago, attended this meeting and messages were received from representatives of the men on many other roads supporting the stand taken by Mr. Grable in calling for a strike ballot.

In calling the meeting of labor leaders at Cincinnati on June 6, B. M. Jewell, president of the Railway Employees Department of the American Federation of Labor, said:

"The question of acceptance or rejection of the decisions now being issued by the Labor Board rests entirely in the membership of the different organizations. A decision reducing wages, which are today insufficient to provide the barest essentials of family life, is of vital importance to the employees affected and there can be no question about the duty of the union executives to submit the matter to them in such a way that they may determine upon the action which will best protect their interests.

"The meeting in Cincinnati is for the purpose of enabling the executive officers to advise with each other as to how, in conformity with the laws of their respective organizations, the matter shall be submitted to the membership for their action upon it."

The net result of the Cincinnati meeting was a decision to send out a strike ballot to the shop employees affected by the Board's last decision and to take similar action in regard to the other classes of employees whose wage scales are now under consideration by the Board if that body orders reductions in their rates of pay.

The submission of a strike ballot to the shopmen was authorized on June 7 by the executive council of the Federated Shop Crafts in session at Cincinnati. In announcing the ordering of a strike vote B. M. Jewell, head of the Federated Shop Crafts, said in part:

"A strike vote is now being sent out returnable June 30. "By no stretch of the facts can this decision be justified.

It is obvious that the decision was not reached through any consideration of the merits as contained in the evidence submitted. I am astonished that a body of the Board's prestige and dignity should be willing to send out such a hastily dressed up and obviously unfair apology for the rates of pay awarded. The Board was offered evidence as to the amount necessary to obtain the necessities of life for families in railroad communities. The rates which result from the decision are so far below those necessary that this evidence must have been ignored.

"At this early date I can forecast but two of the effects of this decision:

"The first will be an immediate confirmation of the belief among our membership and among railroad employees in general that the Labor Board is not an impartial court created to dispense justice but is a body created to help the railroads carry out their labor policy.

"Railroad employees cannot view these decisions separately. The highest paid man must be ready to fight for the lowest paid man."

Indications at the Labor Board are that the decision affecting the wages of telegraphers, the next class of employees to be dealt with in a wage order, would not be available for some time and undoubtedly would not be issued in time to become effective on July 1. The principal question to be decided in the telegraphers' case is not how much money shall be paid but how inequalities of pay on the different roads shall be settled, and it is believed that this problem will take considerable of the Board's time for several weeks.

The Board's reply to Mr. Jewell's request for action on disputes between the shop crafts and various carriers and involving alleged unauthorized wage cuts, piece work and the farming out of shop work was given on June 6, the Board setting aside June 8 and 26 for the hearing of evidence in these cases.

Pennsylvania—Labor Board Dispute

Before Appellate Court

The legal controversy between the Pennsylvania and the Labor Board, the developments in which have been described in previous issues of the *Railway Age*, was re-opened on June 2, when hearings were held in the United States Circuit Court of Appeals at Chicago, as the result of an appeal from the recent decision of Federal Judge George T. Page. Judges Baker, Alschuler and Evans heard the arguments by Messrs. Blackburn, Esterline and W. D. Riter, representing the Railroad Labor Board, and T. J. Scofield and J. B. Heiserman, representing the Pennsylvania.

In making the closing argument on behalf of the Board, Mr. Esterline held that the Board is an arm of the government, analogous to the president or committees of Congress and that, therefore, the Board could not be sued or enjoined. He pointed out that the injunction issued by the Circuit Court, restraining the Board from issuing a decision inimical to the Pennsylvania's interests, stated that the Board's powers were only advisory. He therefore declared advisory powers could not be enjoined any more than the President could be enjoined from submitting a message to Congress or a congressional committee from reporting its recommendation.

These contentions apparently did not meet with the approval of Judge Baker, who frequently took issue with Mr. Esterline and said:

"I do not consider that that question is involved. The fundamental question is whether the Board acted within its jurisdiction in its order to the railroad and, if it did, whether or not the power under which it acted is constitutional."

Mr. Scofield and Mr. Heiserman for the Pennsylvania, argued that the Board acted without jurisdiction in issuing the order and while admitting the right of the Board to prescribe just and reasonable rules, denied the Board's power to direct how the rules governing employees should be made.

The arguments of the railroad's and the Labor Board's attorneys followed the arguments which have been made in previous hearings in this case and which have been outlined in other issues of the *Railway Age*.

The court subsequently took the case under advisement and Mr. Esterline announced that if the Pennsylvania's injunction is upheld by the court of appeals, the Board will carry the case to the United States Supreme Court.

Lovett Denies Railroads

Controlled by Bank Combine

WASHINGTON, D. C.

ROBERT S. LOVETT, chairman of the board of the Union Pacific, testifying on June 1, before the Interstate Commerce Committee of the Senate in connection with the railroad inquiry, branded as "a fabrication without any foundation in fact," charges recently made before that committee by W. Jett Lauck on behalf of the railroad unions that a group of New York bankers and financiers dominate the railroads of the country and the Association of Railway Executives and direct the railroad managements in the purchase of fuel, equipment and supplies and in their attitude towards labor.

"The statement made by Mr. Lauck, so far as it relates to matters within my knowledge, is the most misleading and deceitful narrative I ever have read," said Judge Lovett, who added that Mr. Lauck's "ingeniously worked out diagrams and charts designed to show the alleged control of bankers over the principal transportation systems are from beginning to end an invention and fabrication without any foundation in fact."

"I know of no men," he continued, "in any important business which they do not themselves own, who are as independent and free from control by bankers, boards of directors and others (except commissions and many other public regulatory authorities and the various labor organizations) than the presidents of the principal railroad systems of this country in all matters relating to the maintenance and operation of the railways in their charge, the purchase of materials and supplies therefor, and the wages paid and relations with labor employed thereon; and this same independence is, of course, carried by each executive when he acts as a member of the Association of Railway Executives."

Judge Lovett said in the 18 years he has been connected with the Union Pacific not one of the 15 banking and financial institutions mentioned by Mr. Lauck has ever exerted or sought to exert the slightest influence with respect to purchases of equipment or supplies, wages paid or the policies to be pursued, or in any other respect whatsoever.

"Eleven of the 15 named do not, according to our records of stockholders, own a single share of the stock of any of the roads composing the Union Pacific system, and the remaining four own altogether \$1,618,200 par value of the preferred and \$61,900 of the common stock out of a total aggregate outstanding of \$321,836,600, though I believe and hope that the life insurance companies and others acting as trustees own large amounts of our bonds," said Judge Lovett. "The stock of the Union Pacific is widely scattered and is held by over 50,000 different owners. No one person, firm, corporation or institution owns as much as 2 per cent of our capital stock."

"I state now and as broadly and as emphatically as I can that during all the years I have been a director and officer of the railroad companies named, the management and policies of each system have been in its own interest alone, as distinct from the other systems, and have been as separate in all respects as if there had been no common directors; that there has been no combination or common control or direction of

them; that none of the banks or financial institutions mentioned by Mr. Lauck or shown on his exhibits, and no other bank, banker or financial institution or groups of such have controlled or sought to control them, or had anything to do with the policies or management or with the business or affairs of any of said railroad companies, so far as I know or believe except in lending them money or buying their securities. Where bankers were on the boards, they were there as individuals, the same as other directors and with no more influence except perhaps as to when and how best to raise new capital, as to which they were, of course, experts, and their expressed opinions were heard with interest but not always accepted."

Judge Lovett said that he was unable to find in Mr. Lauck's testimony or exhibits any facts or evidence "to support his unqualified and sweeping charges that a 'New York bank combine' through a 'spread of control of 25 railroad directors linked together 99 Class One railroads operating 211,280 miles or 82 per cent of the country's steam transportation systems.'"

"I am, however, not surprised at such lack of evidence for I know the charge is absolutely untrue and consequently there is no real evidence to support it," said the witness.

Judge Lovett said that Mr. Lauck apparently based his charge wholly upon the fact that some directors who are among the directors of one company are also directors of others.

"The witness fails utterly to distinguish between association and combination," said Judge Lovett. "No body supposes for a moment that because men belong to the same church or to the same club or play golf together or reside in the same community, or commute on the same train, or otherwise associate themselves, that they are in a common conspiracy against somebody and that all their separate interests are brought into the combination. If two rival and competing merchants or bankers happen to have an interest in some other enterprise—a street car line, or a light and power plant for example—or are elected directors of it to represent their interest, no one supposes that their separately owned stores or banks are thereupon combined or cease to compete.

"No banker on any board of directors, or committee, or in other circumstances, or at any time, or place, has ever given me any advice or sought in any way to influence me as to the 'deflation of wages' of railroad labor, or as to what wages should be paid to, or what working rules and regulations should be established for, or what if any contract should be made with railroad labor, or had anything whatever to do with the policy of railroad management with respect to railroad labor. All the bankers with whom I have had anything to do or with whom I have come in contact, on or off railroad boards, or in railroad management, have shown a friendly attitude toward labor, and union labor at that, so far as I ever heard any expression from them on this subject.

"The fact is that the bankers are no more concerned about railroad labor than are other wide-awake citizens and manifest no more interest in this subject. The larger private banking firms in New York at which much of the denunciation has been levelled, and other investment bankers, own little if any railroad stocks. These bankers do not buy stocks to keep but to sell just as the merchant buys goods to sell. They sell as quickly as possible after they buy in order to buy again, for their profit is in the turn-over. What interest have they, therefore, in the railroad wage question, more than any other citizen? It is the stockholder, and on weak roads, sometimes the bondholders, who are interested in wages and working rules and conditions, because as they had been going in recent years these expenses may mean the loss of their property.

"No board of directors nor banking firm or group of financiers can manage a large railroad system. Only dis-

aster would follow such an effort. No board of directors on which I have served has tried. In no business is organization more important or necessary. It would be folly and disastrous to the property for a board of directors, without any request from the president for its advice and suggestion, to interfere with his initiative and instruct him how to deal with wage schedules, working rules, train operations, freight rate adjustments and other matter of operation, which neither the board of directors nor the president alone can settle since they are all matters of agreement with others, after infinite and most complicating negotiations and controversy.

"With reference to Mr. Lauck's charges that this alleged 'inner group of New York bankers and financiers' have combined, through control of directorship, the coal industry, the railroad equipment industry and other industries, so that the railroads pay without protest exorbitant prices for such materials, I will state that so far as it refers to any company of which I am director and, as I believe, to any others, it is absolutely untrue. We have paid exorbitant prices in recent years, as has every individual who has bought anything, but only because we could not avoid it."

"Some of our directors (I think not over three) prior to the effective date of the Clayton law were directors of manufacturing concerns among the many from which we sometimes buy materials. Two are still directors and interested in such concerns but in one such case we buy upon public bidding under the act, and as to the other we discontinued buying because I was anxious for the director to remain on our board.

"No director of the Union Pacific or any of its subsidiaries since my connection with it has ever influenced or sought to influence the purchase of any of our equipment, rails or materials and supplies of any kind. As a matter of fact railroad directors as a rule do not know when or from whom or how railroad purchases are made except in some cases such as the purchase of engines and cars.

"The only function the board ever exercises within my experience with respect to compensation is to require its approval of salaries in excess (usually of \$400 or \$500 per month and exceptions are made even as to this in the case of train service employees, some of whom earn that much."



Photo by International.

The "Collis P. Huntington," Southern Pacific Locomotive No. 1, the First Locomotive West of the Rockies—It Made Its Trip to the Pacific Coast Around Cape Horn on a Sailing Vessel



One of the Mills Left Without Transportation

Missouri & North Arkansas Resumes Operation

Dormant for Ten Months—Restores Service In Five Counties Without Transportation

By K. H. Koach

ON JULY 31, 1921, the Missouri & North Arkansas, a railroad extending from Joplin, Mo., in a southeasterly direction to Helena, Ark., a distance of approximately 368 miles, suspended operation, following a long series of difficulties which culminated in a strike of its employees. The suspension of activities by this carrier left more than 145,000 people without transportation service and literally paralyzed all business in an area of nearly 10,000 square miles, with property valued at more than \$10,000,000; it was also a detriment to an equal additional area in that state, and a somewhat smaller area in southwestern Missouri.

This is the only railroad that passes through Carroll, Searcy, Van Buren, Stone and Cleburne counties, and is also the only rail facility available for the citizens of a con-

During the nine months that the line has been dormant several attempts have been made to revive it, citizens in northern Arkansas and southwestern Missouri volunteering to patrol the tracks and guaranteeing to prevent further destruction of bridges and other properties of the railroad by the strikers and their sympathizers. Some effort was even made to raise a three-months payroll by popular subscription to move the materials on hand, but this also failed.

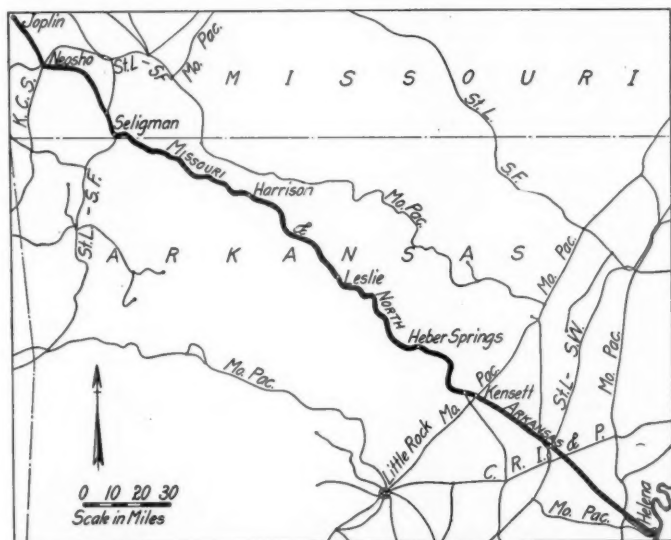
Final action leading to the restoration of service was taken in two hearings held before the Interstate Commerce Commission in December and January, respectively, the second of which resulted in a 25 per cent increase in rate divisions and a loan of \$3,500,000. The Labor Board soon after authorized a 25 per cent decrease in wages, and still more recently the Arkansas Railroad Commission consented to an increase in rates on grain, grain products, petroleum, cement, brick, fertilizer, ties, salt, packing house products, merchandise and coal. With these concessions the company set about to place the road in operation. Upon inspection, the property was found to be in better condition than was anticipated, and service was re-established on June 1.

The M. & N. A. Has Had a Checkered Career

The Missouri & North Arkansas, with all its trials and tribulations, has had an interesting and unusual history. It first came into existence on February 27, 1882, when a company known as the Eureka Springs Railway was chartered to construct a line approximately 20 miles in length, extending from Seligman, Mo., on the St. Louis-San Francisco, to Eureka Springs, Ark., a popular health resort. When completed, it was the only railroad tapping a territory which comprised nearly one-fifth of the entire state of Arkansas, although, of course, the road was of comparatively slight importance when considered in connection with the territory as a whole.

About 1899 new financial interests acquired control of the Eureka Springs Railway and prepared plans to extend the line from that point to Leslie, Ark., a distance of 111 miles, which extension was completed in September, 1903. The new owners also changed the name of the road to the St. Louis & North Arkansas. Nearly \$2,400,000 had been expended on the line up to that time, and, with an inadequate financial return derived from the investment during the few years following, the venture was deemed a failure. Nevertheless, the project was revived in 1906 by the reorganizers of the St. L. & N. A., and the line was again extended, this time to Helena, Ark., on the south, a distance of about 178 miles, and on the north, from Seligman, Mo., to Joplin, a distance of 61 miles, the extensions being completed for through operation by the summer of 1909. The company also entered later into equal joint ownership in the Joplin Union Depot Company with the Atchison, Topeka & Santa Fe, the Missouri, Kansas & Texas, and the Kansas City Southern.

The road has never been a consistent paying proposition.



Map Showing the Missouri & North Arkansas

siderable portion of White, Faulkner, Conway, Hope, Madison, Benton, Boone, Marion, Baxter and Independence counties. To reach another railroad many have been compelled to go 40 to 75 miles over roads that are almost impassible except during the late spring, summer or early fall. The Missouri Pacific is the nearest road on the north, paralleling the M. & N. A. about 15 to 60 miles away. On the south, where these two lines extend in the same general direction, the intervening distance varies from approximately 60 to 100 miles.

Federal Control Causes Collapse

The period of federal control was the direct cause of the collapse of the Missouri & North Arkansas. The Railroad Administration practically doubled the payroll of that company and, after having entangled the operation of the road in other ways, could not relinquish its hold too quickly.

This may possibly be attributed to the supposition that it was built for speculative purposes, rather than for efficient operation, as was the case with many small roads built in that section of the country, or to the fact that the territory traversed by the line did not warrant its construction. Supporters of the latter theory believe that feeders or extensions from the neighboring trunk lines would have been sufficient and would have been built if the original road had not been constructed. Some have also wondered why the road has never been taken over by one of the larger trunk lines. As a matter of fact several roads have made inspection of the property with this object in view, but these investigations showed that it was poorly located and constructed, with many sharp curves and heavy grades.

The road was sold under foreclosure on May 29, 1906, and on August 4 of that year the company was reorganized and chartered for 50 years in Arkansas under the name of the Missouri & North Arkansas Railroad. From that date until 1911, the Missouri & North Arkansas continued to accumulate annual deficits, the net operating deficit for the fiscal year ended June 30, 1911, being \$20,652.

On April 1, 1912, upon the application of the St. Louis Union Trust Company, trustee of the first mortgage bonds amounting to \$8,340,000, dated July 1, 1906, the road went into receivership with W. S. Holt, George L. Sands and Jesse McDonald as receivers. On March 4, 1914, John Scullin, who was president of the Missouri & North Arkansas for a number of years, was appointed a receiver to succeed Mr. Sands, who had resigned, and, on July 1, 1916, Festus J. Wade, president of the Mercantile Trust Company, St. Louis, Mo., was appointed sole receiver to succeed the three above named. From that date until the end of 1917, Mr. Wade operated the road, during which period a surplus was shown at the end of both years, after paying operating expenses and interest on the receiver's certificates.

The government assumed control of the road on January 1, 1918, and three months later raised the standard of wages to conform to that of the trunk lines generally. At the end of another three months the federal authorities returned the M. & N. A. to its owners by telegram. Upon taking charge the receiver found the forces disorganized, no money on hand, wages greatly increased, unadjusted demands for back pay increases, and operating expenses in general greatly in excess of the operating revenues. Conditions went from bad to worse until a few weeks later the director general of railroads offered to lease the road from the receiver for \$175,000 per annum. This was not entirely satisfactory to the owners, who claimed that their original investment was more than \$8,500,000 in addition to which there were outstanding receiver's certificates of more than \$2,000,000, without considering accumulated interest. Notwithstanding this, however, the lease was made.

Under federal control for the year ended December 31, 1919, the road sustained a deficit of \$633,557, the property having incurred a total deficit of \$956,482 up to and including that year. In March, 1920, the road was again turned back to the receiver, this time under the six months' guaranty provision in the Transportation Act. The new wage scale was still in effect, the labor costs having increased to almost twice what they were before the Railroad Administration acquired the road. Apparently regarding the situation as hopeless, Mr. Wade resigned as receiver and on March 6 of that year C. A. Phelan was named receiver and general manager to succeed him. For the year ended December 31, 1920, there was a total deficit of \$378, the smallness of this figure being accounted for by the fact that \$265,000 was received from the government under the guaranty provision.

Strike Brings Climax to Difficulties

The receiver, recognizing the need for drastic economy, ordered wage reductions, effective February 1, 1921, after

having applied for and received permission for this action from the federal judge of the Eastern district of Arkansas, under whose jurisdiction he served. The reductions were contested immediately by the employees of the company, who brought the controversy before the United States Labor Board. When the Board remanded the dispute to a conference between the management and representatives of the men, the latter immediately notified the officers of the road that the employees would walk out unless the wage reduction order was rescinded. This threat materialized on February 27, when the enginemen, trainmen, telegraphers and station agents left their work.

The strike was attended with considerable violence and the property of the company was seriously menaced and damaged, although traffic was resumed on March 24, under armed guards, and with many of the regular employees replaced by strike breakers. During the reign of terror which followed a number of the strikers were given from one to six months' jail sentences for abusing the strike-breaking employees. Locomotives were damaged frequently, sometimes by the use of explosives, and firearms were brandished and used in regular outlaw fashion. At first the citizens within the territory served by the Missouri & North Arkansas were extremely antagonistic towards the strike breakers, their sympathy being with the original employees who had lived in that country for years and who had a comparatively large sum of money invested there. However, inconvenience soon changed their minds and it is said that a number of the labor agitators were later deported from that section under threat of death.

Receiver Phelan, after a nervous breakdown, resigned on July 14, and J. C. Murray, then traffic manager, was appointed in his place. He immediately encountered difficulty in raising the July payroll of \$28,000 and was forced to announce on July 22, by authority of the federal court, that the road would cease to function on the last day of the month. This gave barely one week's notice to thousands of people that they were to be deprived of their only rail transportation. The Western Tie & Timber Company was left with 250 carloads of ties and other forest products on hand awaiting shipment which it has been unable to move since last July; the White County Lumber Mills, a subsidiary company, had 200 cars; the National Lumber & Creosoting Company between 100 and 400 cars, and several coöperation concerns reported similar shipments of perishable forest products awaiting transportation. It has been estimated that altogether more than 3,000 carloads of freight were ready to be shipped when operation was stopped.

M. & N. A. Not a Logging Road

The Missouri & North Arkansas is not to be classified as a logging road, although the lumber industry is its principal source of traffic. The tonnage of forest products originating on this line increased from 60,951 in 1908, to 395,390 in 1913, and then declined to 234,108 in 1919. Outside of the lumber industry, several counties served by the M. & N. A. are rich in mineral deposits; Joplin, Mo., is a lead and zinc mining center. The area between Neosho, Mo., and Wayne, produces live stock, wheat, flour and strawberries. From Seligman, Mo., as far south as Leslie, Ark., live stock, ties, lumber, vehicle materials, fence posts, dairy products, poultry and general farm produce originate in considerable quantities. From Leslie south cedar posts and live stock, and from Boone and Carroll counties, orchard products and strawberry shipments are received.

Joplin and Helena are the two largest cities on the line, Helena being the third largest city in Arkansas. Harrison, the next largest town served by this road, is located midway between Joplin and Helena and has a population numbering but a few thousand; further south is Heber Springs, a health resort of considerable renown.

Plans for Resumption of Operation

The security holders of the Missouri & North Arkansas applied to the Interstate Commerce Commission last December for a loan of \$3,500,000 and an increase in their division of rates, pledging the entire railroad property as security for the loan, and stating that the money was to be used to pay the receiver's certificates and debts, place the road in condition to operate, and provide working capital. The first hearing before the commission failed because eight connecting lines, the Missouri, Kansas & Texas; the Missouri Pacific; the St. Louis-San Francisco; the St. Louis Southwestern; the Atchison, Topeka & Santa Fe; the Kansas City Southern; the Yazoo & Mississippi Valley and the Chicago, Rock Island & Pacific, opposed the increased divisions, denying the claim of the petitioner that the Transportation Act permitted such action.

The M. & N. A. was then asked to provide further information, the substance of which was presented at a second hearing held in Washington, D. C., from January 16 to 20. At this time the road testified that if it could secure a 25 per cent increase in rate divisions and a 25 per cent decrease in labor costs, it could operate at a profit and repay its debt to the government.

It was necessary—those interested in the Missouri & North Arkansas claimed—that favorable decisions be received from both government bodies if the road were again to resume operation. This was finally accomplished, the United States Railroad Labor Board allowing a 25 per cent reduction from the present wage scale, and the Interstate Commerce Commission a 25 per cent increase in the division of rates, and a loan of \$3,500,000. The commission's order for increased divisions is alone expected to provide additional revenue of \$250,000 to \$275,000 annually. In the Labor Board's decision provision was made for any surplus remaining after operating expenses, taxes and interest on the government's loan have been paid, to be divided among the employees up to the amount of the wage scale paid by other carriers.

A new application of the Transportation Act was advanced in this hearing before the Interstate Commerce Commission by the attorneys for the petitioning railroad. It was pointed out that the Missouri & North Arkansas was included in a group of railroads whose total valuation was considered as the basis for the establishment of such rates as would yield an average return of six per cent on the combined investment. The petitioning carrier, it was stated, had earned nothing on its investment, while the connecting lines had thereby benefited by this provision of the Transportation Act, and had received more than their share. This was held to be true even during the past year when the road has been out of service, since the M. & N. A.'s valuation was included in the group's total, upon which each road's earning capacity was based in so far as fixing rates is concerned. The attorneys further contended that the Transportation Act contemplated that the small independent carrier was to receive the same return upon its investment as the larger railroads, and that this return should be equalized within this group, the same as would have been done if the Missouri & North Arkansas had been a branch of one of the larger trunk lines.

Of the \$3,500,000 borrowed from the government, \$750,000 is being spent to place the property in normal condition. All legal matters were settled on April 10, when the road was sold at public auction at Harrison, Ark., to the Missouri & North Arkansas Railroad Company, which has been incorporated under a new 50-year charter and, on May 6, when the commission authorized the issuance of \$3,000,000 of common stock, consisting of 30,000 shares of \$100 par value each, and of \$5,000,000 first mortgage 15-year gold bonds, the latter to be pledged with the secretary of the treasury as further collateral security for the government loan.

Several hundred men have been re-employed, although the

local labor organizations have refused to abide by the decision. However, there is no longer a possibility that outside union labor will decline to handle interchange freight as was first reported. Trainmen on the connecting lines state that the striking employees surrendered their right to sympathy when they refused to accept the decision of the United States Railroad Labor Board. Many of the former employees have returned to service, and the Harrison shops are now being operated with the full quota of 135 men.

On May 15 Mr. Murray announced the inauguration of mixed train service for freight and passengers destined to and from points on the line between Seligman, Mo., and Kensett, Ark., and service was restored over the whole line by June 1. The public has welcomed the return of its only railroad as a means to prosperity and normalcy in place of the primitive mode of living to which they have been subjected. With the support of the people it serves, combined with the awards from both government regulating bodies, the Missouri & North Arkansas should have no further difficulties in performing its function as a common carrier.

Accident Investigations— October, November and December

THE INTERSTATE COMMERCE COMMISSION has issued its tenth quarterly summary of accident investigations made by the Bureau of Safety, covering the reports completed in the three months ending with December, 1921. This pamphlet of 27 pages contains reports on 12 train accidents; and also a tabular list giving condensed information concerning all of the accidents investigated during the 12 months ending with December 31.

The preceding quarterly summary was reported in the *Railway Age* of December 10, 1921, page 1145; and the one before that in the issue of September 3, page 459.

The 12 accidents now reported, together with one (Saybrook) not included in the pamphlet, occurred as follows:

Derailement.....	Pennsylvania	Edinburg, Ind.	Sept. 17
Derailement.....	N. Y., N. H. & H.	Saybrook Junc.	Oct. 3
Collision.....	Pennsylvania	Sunbury, Pa.	Oct. 7
Collision.....	Long Island	Bay Ridge, N. Y.	Oct. 26
Collision.....	Pennsylvania	Manhattan Tr., N. J.	Oct. 28
Derailement.....	Baltimore & Ohio	Green Ridge, W. Va.	Oct. 29
Collision.....	Delaware & Hudson	North Albany, N. Y.	Oct. 31
Collision.....	Texas & Pacific	Addis, La.	Nov. 9
Collision.....	Texas & Pacific	Camps, Tex.	Nov. 10
Collision.....	Salt Lake & Utah	Taylorville, Utah	Nov. 18
Collision.....	Oregon-Washington	Celilo, Oregon	Dec. 1
Collision.....	Illinois Central	Woodmont, Pa.	Dec. 5
Derailement.....	Phil. & Reading	Chicago, Ill.	Dec. 14

Following are abstracts of the Bureau's reports:

The first report is that of a derailment on the Pennsylvania near Edinburg, Ind., on September 17, 1921, concerning which the chief of the Bureau of Safety, after making an investigation, disallowed the statement of the railroad company as to the cause, declaring that it was the failure of a bridge pier, when the railroad company said that the derailment of the train before it reached the bridge, from some cause unknown, was the real explanation.

The train was northbound passenger 327, which left Edinburg at 8:52 p. m., and shortly after was derailed at bridge No. 18, while running at about 30 miles an hour. The engineman was killed and three mail clerks and two employees were injured. The locomotive and the mail car, with the bridge floor, were overturned to the right. The trouble was a weakness in the center pier of the bridge. This pier, built of native limestone, because of long exposure to the elements, had been weakened by exfoliation and disintegration. This masonry was built 67 years ago. By successive stages of high water some of the mortar of the interior of the pier had been washed away and mud had taken its place.

The theory of the railroad officers that the locomotive had

left the rails before entering upon the bridge is declared to be unfounded, no satisfactory evidence being adduced to support it. The report issued by the commission contains halftone engravings of photographs of the broken face of the center pier of the bridge and other photographs showing disintegration of limestone ashlar masonry in the faces of the abutment.

On the New York, New Haven & Hartford, near Saybrook Junction, Conn., on the morning of October 3, about 2 o'clock, the eastbound Boston night express, No. 32, was thrown off the track at the derailling switch at the approach to the bridge over the Connecticut River, and the engine slid down a bank and lodged on its side. The train was moving at about 30 miles an hour and five cars ran off the track; but no person was seriously injured.

The signal for this train was clear, but the derailling switch had been maliciously loosened by some person or persons unknown. The interlocking had been overhauled two or three months before the occurrence of this derailment and the government inspector found it to be in good condition. Examination of the derail shortly after the derailment disclosed that the cotter pins had been taken out of the throw rod, the bolt lock and the facing point lock; and the facing point plunger had been removed.

The trains in collision on the Pennsylvania Railroad near Sunbury, Pa., on October 7, were an eastbound freight and a following train consisting of two locomotives, 1676 and 1097, moving backwards. The locomotives ran into the rear of the freight, crushing the caboose and doing other damage; and the fireman of one of the locomotives was killed. This collision occurred in a dense fog about 5:40 a. m. The freight, moving toward Sunbury yard, had entered a middle siding and had stopped; and the locomotives, which should have passed on the main track, entered the siding, the engineman on the leading engine not being aware that he was on the wrong track. He had passed the switch on the indication given by an interlocking signal, the arm of which, when inclined 45 degrees from the horizontal, governs movements to either track. The signalman had neglected to change the switch after the passing of the freight train, although he had ample time to do so. The inspector places the blame on the engineman of engine 1676 (he seems to have had control of both of the locomotives) for not knowing on what track he was moving, and failing to move under control while on the siding, as required by the rules. The engineman admitted that his failure was the main cause of the collision.

The collision of October 26 on the Long Island occurred in a freight yard; one employee was killed and two injured. The cause was failure to control the train (a locomotive and a caboose, moving backwards), the conductor being responsible for the lookout.

The collision at Manhattan Transfer on the Pennsylvania, October 28, a rear collision of passenger trains, was charged to the negligence of an engineman and a flagman, the engineman running past three signals. This collision was reported in the *Railway Age* of December 31, page 1328. Among the passengers injured in this collision were two government officials, the postmaster general of the United States and a member of the Interstate Commerce Commission.

On the Baltimore & Ohio, near Green Ridge, W. Va., on October 29, eastbound freight extra No. 4415 was derailed and one car—the 37th car in the train, which was thrown off by the breaking of one of its wheels—fell on the westbound track and was run into by westbound train No. 29, consisting of a locomotive and 21 express cars; and the engine of No. 29 fell down a bank. The engineman was killed.

The inspector finds that the wheel which failed had been heated very hot, but he cannot determine certainly whether this was due to a hand brake having been set, or to a stuck air-brake. The train had been on the road about one hour,

from Cumberland, and it appears that the brakes were not properly inspected at that point; and an inspection of the triple valve of the 37th car after the derailment indicated that when the brakes were applied, before the train started from Cumberland, the engineman probably did not release those on this car. The triple valve, it is believed, was stuck in such a position that communication was established between the brake pipe and the brake cylinder.

The brakes in the train were not properly tested at Cumberland and there was no report made to the conductor as to the percentage of brakes in operation; in fact, no one had any definite knowledge as to the condition of the brakes in the train. The inspector finds that this kind of neglect has been common. The train was being made up about 7:00 a. m., and the night inspector, going off duty at that time, did not properly finish his task; nor did he give suitable notice to the day inspector. This loose practice is recommended to the immediate attention of the officers of the road.

The collision on the Delaware & Hudson at North Albany, N. Y., on October 31, was between a train of empty passenger cars and a switching locomotive; the fireman of this locomotive was killed. The accident occurred about 5:40 p. m. The empty cars were being pushed, and the locomotive, which had been switching on a side track, was carelessly backed out a little too far so that it struck a passenger car in the side. A flagman had been out while the switching was going on, to flag the train of empty cars, but he had been called in. The switcher was being managed by the fireman, the engineman sitting on the other side of the cab; and the inspector is unable to say why the fireman allowed the engine to foul the main track. The conductor was on or near the engine, where he could see the whole situation, and it is held that he and the engineman should have taken prompt measures to see that the engine did not foul the main track.

The collision on the Texas & Pacific on November 9, near Addis, La., occurred at a crossing, a locomotive from a sugar plantation on the sugar company's track being run into by westbound passenger train No. 23. The passenger engine was overturned and the other one was badly damaged. The plantation engine was moving slowly, but the view of the passenger train was obscured by a field of sugar cane. The engineman had run this engine on the sugar tracks about two months each year for the past three annual sugar seasons and had had no accident of this kind before; but he failed to stop before passing over the main line. He admitted that he had been in the habit when moving a locomotive without cars, to ignore the rule requiring a stop at the crossing. There were some indications that his steam brake may have been out of order. The engineman of the passenger train was killed and one passenger and three trainmen were injured.

The collision on the Texas & Pacific at Camps, Tex., November 10, between a westbound passenger train and an eastbound freight, was due to disregard or forgetfulness of a train order on the part of the passenger train. This collision was reported in the *Railway Age* of February 11, 1922, page 374.

The trains in collision on the Salt Lake & Utah (electric) Railroad, near Taylorsville, Utah, on November 18, were southbound passenger No. 3 and northbound passenger No. 2, each consisting of a single motor car. The southbound train was waiting on a gravel pit spur track to meet the other train; and that train came on at 25 miles an hour and, passing over the misplaced switch, collided with No. 3, badly damaging both cars. The motorman of No. 3, an assistant train master and an electrician, were killed and 28 passengers and seven employees were injured. The conductor of the standing train had gone to the switch to straighten it, but in sweeping away snow he forgot the switch; and forgot it so completely that he signaled by hand to the northbound train to come on. That train had slackened

speed; but, on receiving the motion, put on more power; and the motorman evidently did not see the switch target, although it was in plain view. The rule requires all trains to approach all switches under control, and for not doing so the motorman of No. 2 is censured.

The collision on the Oregon-Washington at Celilo, Oregon, on December 1, was briefly reported, with an illustration, in the *Railway Age* of December 17, page 517. An abstract of the report of the Bureau of Safety will be found in the issue of April 29, page 1031.

The collision on the Philadelphia & Reading at Woodmont, Pa., on December 5, was reported in the *Railway Age* of December 10, page 1163; and the report of the Bureau of Safety was abstracted in the issue of January 14, page 173.

The train derailed on the Illinois Central at Thirtieth street, Chicago, on December 14, was southbound suburban passenger No. 379 on track 5. One passenger was killed and another fatally injured; and 17 other passengers and

one employee were injured. Northbound suburban passenger train No. 400, on track 6, moving at about 40 miles an hour, had its cars scraped the entire length of the train by a car of the southbound train which was derailed and fell toward track No. 6. The derailment of the car in the southbound train was due to the pulling out of the coupler or drawbar of the tender, immediately in front of this car; and this failure was due to the breaking of one of the plates composing the extension shank of the coupler. The fracture was concealed by the end sill. There had been an old fracture. The investigation developed that the fractured plates were of smaller size than are now standard. The repair shop foreman testified that the couplers on locomotives of this class are removed, inspected and supplied with new rivets every 90 days. The coupler in question had been removed at the regular inspection period on August 8. The plate which failed was $1\frac{1}{8}$ in. in diameter, or $\frac{3}{8}$ in. less than the latest standard.

To Make Railroad and Highway Signals Consistent

Conference at New York to Improve Highway Signals—
A. H. Rudd Outlines Railroads' Attitude

A MOVEMENT to standardize colors for [street] traffic signals was begun in New York City recently by the American Engineering Standards Committee, and the plan, as formulated, includes consideration of the same subject as related to signaling in railroad and steamship operation, and also in aerial service, the purpose being to seek the establishment of codes so differentiated, one from another, that there shall be no inconsistency, and no conflict in practice, as between these different fields of transportation. Pursuant to this end the Signal Section of the American Railway Association was invited to be represented at the meeting of this committee; and A. H. Rudd, chief signal engineer of the Pennsylvania Railroad, acted as the representative.

This meeting was held at 29 West 39th street, New York City, on May 23, Dr. P. W. Agnew, chairman of the Standards Committee, serving as chairman of the conference. Other interests invited to this conference were the American Association of State Highway Officers; automobile interests, electric light and insurance interests, the Safety Institute of America and in general all classes officially or professionally interested in safety on the highways. The conference was called at the request of the Illuminating Engineering Society and the International Traffic Officers' Association. Resolutions were adopted expressing it as the sense of the meeting that an attempt should be made to standardize colors, as proposed, with a view to covering not only highway traffic of all kinds, but emergency exits of buildings and all lights and signs by which the public is guided.

Mr. Rudd presented his conclusions, not as an official statement from the American Railway Association, but simply as logical deductions from incontrovertible facts. He spoke, in part, as follows:

The railroads are interested in eliminating the use of the red light for purposes other than that of indicating danger or stop and desire that any scheme devised may conflict as little as possible with their own signal systems. The unification of colors for traffic signals should be undertaken and laws should be promulgated and enforced for the observance of the systems adopted; everyone interested should attempt to mold public opinion, as enforcement or non-enforcement of the law depends largely upon the state of public opinion. Uniformity is not only desirable but absolutely necessary;

but it is only the beginning of the solution of the problem of accident prevention. The most difficult problem is to guide public opinion.

Signal systems of railroads differ but the fundamentals are largely standardized and the results have been remarkably successful. But, even with these systems and skilled and disciplined engineers, accidents occur. The railroads are attempting to educate their employees in self-preservation. The underlying cause of most accidents is the apparent inherent disposition of the American people to take chances. Uniformity is desirable but uniformity will not cure the trouble. To satisfy the traveling and shipping public, passenger trains must be run at high speed, and it cannot be expected that such trains may be stopped ordinarily when an automobile stalls on a crossing.

[Mr. Rudd then went on to give an interesting and detailed summary of the record of automobile accidents and their causes on the Pennsylvania System in five months ending with February last, during which time accidents of this class resulted in 55 persons being killed and 251 injured. The total number of such accidents was 576, of which 406 did not result in bodily injury and therefore would never be heard of in any vital statistics. He then continued:]

It would seem that, for the good of the country, the regulations should be such that no incompetent or criminally careless driver should be permitted to operate a machine; that, if uniform colors are established, drivers should be required to pass a test for acuity of vision and color perception; and that the violation of traffic signals at street intersections, or at highway crossings of steam and electric lines, and exceeding speed limits in towns and villages, should incur penalties, backed up by public opinion.

The American Railway Association, in connection with a committee of the National Association of Railway and Utilities Commissioners, and representatives of some of the automobile associations some years ago adopted four standards: (1) An approach sign for railroad crossings to be erected on the highway by the public authorities. Co-operation of public authorities in erecting these would be of great assistance. Some States require them by law; others by order of Commissions. They ought to be adopted universally and the people made to regard them. (2) Crossing gates (where

used) striped black and white. As most of the railroads use these stripes, they should be reserved for this purpose. Penalties should be enacted for the careless breaking of gates. (3) Red lights on gates and in the hands of crossing watchmen. Their use should be extended. (4) Stop signs [disks, not flags] in the hands of crossing watchmen. This disk should be made universal.

With these provisions enforced there remains, as far as the railroads are concerned, only the standardization of the automatic highway crossing signal. This is now in the hands of the Signal Section of the American Railway Association, and it is expected that the matter will be discussed and perhaps sent to letter ballot at its meeting on June 14. If some uniform arrangement is recommended, as seems possible, and then adopted by the American Railway Association, it may well be embodied in the requirements of this body, and its use reserved solely for the purpose indicated. Automatic apparatus at crossings should give the stop sign only when trains are approaching. The use of gates should be reduced to a minimum. Gates unattended and standing erect during certain hours of the day are a potential menace instead of a safeguard, as they encourage people to cross. The colors of signals used on the railways are, generally: red for danger (stop), yellow for caution and green for clear (proceed). The public is primarily generally educated along the line that red means danger, but the color has been so misused that its significance has been greatly weakened. We believe it should be restricted by general agreement to that for which it is best adapted, namely, danger, and that it should not be used for any other purpose. The use of a red light for fire exit in a theatre is absolutely wrong in principle. The light should indicate Proceed instead of Stop.

If a movement toward uniformity is to be carried to a successful conclusion, the work will have to be divided among various committees and subcommittees. This is no place to submit details, but we have gone into the matter far enough to be convinced that the principles underlying railway signaling may be applied absolutely and correctly to the signaling of highway traffic, industrial plants, and the marking of dangerous points, etc., without undue complication, except in some cases, the chance of the enginemen of high speed trains possibly mistaking lights on highways for their own signals. The ideal arrangement, of course, would be to have the colors entirely different, but Nature has not provided us with a spectrum sufficiently long. If all men believed as I do confusion would be eliminated by giving railroad signals by position and highway signals by color; but there is no chance of this arrangement being adopted for many years and, therefore, we must take the situation as we find it.

This body should, we believe, adopt—

1. The principle of red for stop everywhere unless qualified by a more favorable indication; that is, at highway crossings with railroads if a train is approaching, at street intersections, both in fixed signals and in the hands of traffic officers; at the ends of streets, and possibly to indicate excavations, in the streets.
2. Yellow for tail lights of automobiles, possibly for excavations in streets, and for calling policemen, or for any other purpose where caution is required; possibly at busy street intersections to indicate that the traffic lights will be changed from red to green, or from green to red.
3. Green lights for fire escapes; for Proceed at street intersections and [at other places] to indicate the way is clear.

TO ADVERTISE IN FRANCE.—The Canadian Government is said to be preparing to send an exhibition train through France this year. An item of \$50,000 to cover the cost of the train has been approved by the House of Commons. Both agricultural and industrial exhibits will be shown.

Educational Transportation Institution Proposed

WASHINGTON, D. C.

THE JOINT COMMISSION of Agricultural Inquiry in its report on transportation will recommend "the establishment of a private research and educational institution under disinterested auspices for the purpose of promoting education in the principles, operation and practices incident to transportation."

Sydney Anderson, chairman of the commission, discussing this recommendation said: "There are approximately \$50,000,000 invested in transportation in this country, including steam railways, electric railways, highways, automobiles, motor trucks, waterways and shipping. These agencies of transportation, which should function as a co-ordinated system in the aid of commerce, have come into existence without relationship to transportation facilities already existing. There is no agency through which the basis of fact and principle necessary for the co-ordination of these transportation facilities so as to give the most efficient service at the lowest cost, can be secured. There is no place today where the business of transportation can be learned except in the apprenticeship of the business itself. An institution such as the commission suggests would furnish a means of definitely establishing the facts and principles of transportation upon which sound decisions respecting transportation policies can be predicated; the relationship of the different agencies of transportation to each other, and the relationship of these agencies to agriculture, industry, trade and commerce. It would also furnish a means for the dissemination of education in the principles, operation and practices incident to transportation."

Mr. Anderson further said in discussing this recommendation, "I understand that the organization of a National Transportation Institute is under way, and I believe that the organization of such an institute should and will deserve the co-operation and support not only of the transportation agencies, but of the people generally who use these agencies and are primarily interested in the services which they render."

One of the principal causes of increased living costs in the United States as found by the Joint Commission of Agricultural Inquiry and to be fully disclosed in the final section of the commission's report, soon to be rendered to Congress, consists of an unwieldy system of marketing and distribution which includes relatively inefficient means and uneconomic methods, coupled with wasteful buying habits and practices on the part of the consuming public.

"We have now reached a point," said Chairman Sydney Anderson, "where it costs more to distribute and serve than it costs to produce. Commodity values are lost in a mass of service costs and the time has come for a consideration of the fundamental problem of the economic distribution of the essentials of living."

"The commission is convinced that the problem of distribution is one of the most important economic questions before the American people. Only through its correct solution can there be an equitable adjustment of the relations of agriculture, industry, transportation, labor, finance and commerce as among themselves and as correlated with the interest of the public."

Chairman Anderson said that the commission found no fundamental data of a governmental or public character with respect to marketing and distribution, and it was, therefore, necessary to undertake a pioneering effort to secure from the original sources the basic facts of the problem. For this purpose the commission secured the technical assistance and the co-operation of trades and industries covering the manufacture or conversion and the wholesale and retail distribution of more than 200 essential commodities.

"We have found no single factor in this complex price structure," said Chairman Anderson, "which can be held to be solely responsible for the spread between producers and consumers. Neither is the commission able to point out a remedy, legislative or economic, which of itself will reduce this spread.

"The commission will be able, however, to make certain suggestions which it believes will indicate the method by which improvements and economies can be made in our distributive system.

"The Joint Commission does not believe that Congress can correct the faults of existing conditions and methods of distribution. We believe that the responsibility rests on the entire people to make such readjustment of custom and habit as will permit the development of a system of economic distribution which will result in a more equitable relationship between what the producer receives and consumer pays.

"The cost of distribution is made up of an endless number and variety of costs of material and service, each of which influences the others and all of which combine to make the price which the final consumer pays. These factors

vary in influence upon one another and upon the final price from year to year and month to month and even day to day. Each of them is part of a complex and flexible price structure which is extremely sensitive to fundamental economic and psychologic forces such as taxes, interest rates, freight rates, custom, habit, usage and practices of producers, consumers, manufacturers and distributive agencies.

"The distributive situation will be better appreciated when consumers realize that out of 41,614,248 people engaged in gainful occupations, 29,570,867 are engaged in manufacture, transportation, distribution and allied activities. There is hardly a commodity in daily use that does not reflect the joint services of several million people. All of us need to realize more clearly that not only must the producer receive proper compensation for the raw materials, but that out of the charge for service along the way to the consumer the men who operate railroad trains, the men who drive trucks, the men who operate machines, the men who nail boxes, the men who wrap packages and the men who make deliveries must be enabled to purchase their share of the finished commodity for their families."

Reorganized I. & G. N. Will Need Much Improvement

Not in Good Physical Shape—Should Be Able to Meet Lowered Fixed Charges

By Charles W. Foss

THE INTERNATIONAL & Great Northern has been in receivership since August 11, 1914. Last week a plan was announced for its reorganization (*Railway Age*, June 3, page 1312). This plan proposes a reduction in the company's fixed charges of \$418,175. The fixed interest charges of the old company were \$1,597,175; for the new company they will be \$1,197,000. In addition, there will be contingent interest charges on an issue of \$17,000,000 of adjustment mortgage six per cent bonds, which interest charges will total \$1,020,000, making the total fixed and contingent interest charges \$2,199,000. Judging by the results which have been obtained since the beginning of the receivership, it is apparent that the new company should be able without any particular difficulty to earn its fixed interest charges. As to whether it can earn the contingent charges on its adjustment bonds is, however, a question. The reorganization is termed a drastic one. The characteristics of the property, physical and otherwise, require it to be.

The International & Great Northern is far from being a rich road. It needs a great deal in the way of improvements and for some reason it does not seem to have had that expansion of earnings which has been more or less general in the case of the other lines in the southwest. The road, however, serves a good territory which is expanding in wealth and prosperity in fairly large degree. It also has its importance as a connecting carrier serving Houston, Galveston, etc., and one of the most interesting features of its location are the possibilities in case traffic with Mexico is restored to anything like its pre-revolutionary importance. The line to Laredo, Tex., at present is not one of the important links in the system. The importance of Laredo as a border point is shown by the fact that 72 per cent of all the land movement from the United States into Mexico passes through this point. The I. & G. N. has competitors at Laredo, as well as at the other places where United States carriers connect with the National Railways of Mexico, but it should be in a preferred position because of its relationships with the Texas & Pacific

and the Missouri Pacific in what is known to passenger men as the Sunshine Route.

It is, of course, a familiar fact that the railroad mileage of Texas was built much ahead of the growth of population and the agricultural and other production of the state. In recent years, however, this situation has been remedied in considerable extent because of the rapid growth which the state has experienced and also largely because of the prosperity which accompanied the development of oil. The International & Great Northern, however, does not seem to have had a full part in this development up to the present time. Further than that, it is confronted with a large amount of competition. This is not particularly unusual for the lines in Texas, but, nevertheless, the situation wherein practically every important town served by a railroad is also served by two or three competing lines, is not without its drawbacks.

The I. & G. N. serves Houston with its own lines, and Galveston by means of trackage rights. There is much friendly rivalry between these two cities. Houston has a ship channel and has aspirations of being a port in its own right. It is of interest to point out that the I. & G. N. has a large amount of property along the south side of this channel and that its position in that city is benefited thereby.

The I. & G. N. Lines

The mileage of the International & Great Northern totals 1,160 inclusive of trackage rights. The Gulf division extends from Longview to Houston, 232 miles. Connection with the Texas & Pacific is made at Longview and access to Galveston is obtained by trackage rights from Houston over the Galveston, Houston & Henderson, 48 miles. The San Antonio division includes the line from Palestine to Laredo, 413 miles. The Fort Worth division is a diagonal line extending from Spring on the Galveston division, crossing the San Antonio division at Valley Junction, and then north to Fort Worth, where another connection is made with the Texas & Pacific. The road has a number of branches but

it is an exception to most of the roads in the southwest in that its branch lines constitute but a relatively small proportion of its total mileage.

The road has maximum grades up to 1.25 per cent, except on the line from Fort Worth to Houston, where the maximum grade is only 0.7 per cent, this being the lowest grade line between north and south Texas. The road receives a large proportion of its traffic from connections. In 1920, which was the best year in the company's history from the standpoint of tonnage, it carried a total tonnage of 4,973,659, of which it originated 2,174,893 tons, and received from connections 2,798,766 tons. Its leading commodities are wheat, cotton, lumber and petroleum, both crude and refined.

Traffic Characteristics

The wheat tonnage is almost entirely received from connections; in the case of cotton, something about two-thirds. The road, however, serves a rich cotton territory; cotton is raised in every county in Texas which is reached by the International & Great Northern. In the cotton year of 1921 it handled into Galveston, a total of 1,230,000 bales. In 1920 the cotton tonnage carried by the International & Great Northern totaled 274,020 tons, but the revenue from the transportation of cotton was, of course, much greater than the tonnage figures would indicate.

Lumber is received on its own lines in east Texas and there is an equal amount received from connections. The

thence to the north Atlantic ports by sea. Large agricultural areas are being brought into production yearly, to a great extent because of new irrigation projects. The I. & G. N. will presumably secure the benefit of this future development.

Long Haul

From what has been said, it should be evident that the International & Great Northern has the advantage of securing a long haul on a large proportion of its tonnage. The actual figures show that the average haul in recent years has averaged about 185 miles. Further than that, it receives a comparatively high revenue per ton-mile; this figure in 1920 was 1.516 cents; in 1919 it was 1.4 cents. As this is written, the 1921 figure is not available, but it is to be supposed that it will show for the year a slightly higher figure even than in 1921.

Passenger Service

The leading feature of the I. & G. N.'s passenger service results from its being a part of the so-called Sunshine Route and also because of the passenger service which it handles in connection with the National Railways of Mexico through Laredo, Tex. About 70 per cent of the road's total revenues are derived from freight service, which will give some idea of the relative importance of the passenger service to all the service performed by the road. The Sunshine Route is constituted by the line of the Missouri Pacific from St. Louis to Texarkana, the Texas & Pacific from Texarkana to Longview, and the I. & G. N. from the latter south to San Antonio and Houston. The Sunshine Special, which operates over this route, is one of the best trains in the southwest. This train was established in the latter part of 1915; it is an all-steel train. For a time the I. & G. N. had no steel cars of its own and had to pay equipment rentals to the other two lines. In 1916, however, it ordered 11 steel cars as its quota. The service in connection with the National Railways of Mexico is constituted in the cars which are run from San Antonio to Mexico City and to Tampico.

Physical Condition

The road, as would be expected from the general underlying conditions, is not built to high physical standards. It lacks heavy rail. Its motive power is not of high standard and its general physical appearance is not good. Immediately after the receivership was established in 1914, the first things that were taken in hand were the equipment situation and roadway. In a communication which is published with the reorganization plan, J. W. Kendrick makes the statement that since the beginning of receivership some \$5,000,000 has been spent on the property and this largely for ballast and for widening cuts and fills. It should be understood that while \$5,000,000 will cover a fairly large amount of work, the International & Great Northern has not been able by any means to carry out the same sort of an improvement program as the Katy, for instance, is now bringing to a completion.

The International & Great Northern annual reports give a considerable amount of information as to exactly what has been done with reference to the road's physical improvement during the receivership. Unfortunately the 1921 report is not yet available so that such figures as are given will relate to the road's physical condition as of December 31, 1920; it is to be presumed, of course, that a large amount of work may have been carried out during 1921.

On June 30, 1915, of the road's *main line* mileage of 916 (the road's total owned mileage is 1,106), 62 per cent was dirt ballast. The figure in miles at that time was 566; 217 miles was ballasted with gravel, 49 with shell, 38 with cinders and 35 with stone. On December 31, 1921, the ballast condition had been changed so that of the main line mileage only 144 miles still had dirt ballast, this including 91 miles of the line between San Antonio and Laredo and

TONNAGE CARRIED IN 1920

Commodities	Originating	Received	Total
Wheat	49,121	474,088	523,209
Corn	38,987	40,157	79,144
Cotton	114,043	159,977	274,020
Cottonseed and products, except oil	100,922	44,552	145,474
Other fresh vegetables	55,373	77,644	133,017
Total products of agriculture	473,011	1,050,844	1,523,855
Cattle and calves	58,453	40,303	98,756
Total products of animals	123,782	74,459	198,241
Bituminous coal	26,144	137,719	163,863
Lignite	285,653	60,925	346,578
Clay, gravel, sand and stone	242,723	89,428	332,151
Crude petroleum	68,205	161,408	229,613
Total products of mines	677,705	723,345	1,401,050
Logs, posts, poles and cordwood	137,955	31,950	169,905
Lumber, timber, box shooks, etc.	188,919	220,383	409,302
Total products of forests	343,008	284,839	627,847
Refined petroleum and its products	104,297	128,179	232,476
Cement	45,979	16,088	62,067
Lime and plaster	38,433	8,898	47,331
Total manufactures and miscellaneous ..	438,299	566,275	1,004,574
Grand total, carload traffic	2,055,805	2,699,762	4,755,567
Merchandise—All l. c. l. freight	119,088	99,004	218,092
Grand total, carload and l. c. l. traffic ..	2,174,893	2,798,766	4,973,659

oil traffic is received at various points; one of the most important sources is that from the Trinity & Brazos Valley at Houston for movement to Texas City. There is also a large movement to refineries at San Antonio, notably in the case of the traffic received from the T. & B. V. at Jewett. Another important part of the road's tonnage is lignite coal, which is peculiar in view of the fact that the road is in a territory which has large sources of fuel oil. The lignite is secured at various points along the line, such as Crockett, Rockdale, at points south of San Antonio, and near Palestine. It is largely used for local consumption in cotton gins, office buildings, etc., and traffic in it varies with the price of competing fuel oil.

Products of agriculture, outside of grain and cotton, also represent a very considerable part of International & Great Northern traffic. Fresh vegetables originate primarily in the territory immediately north of Laredo. The Laredo district is an important onion production center and the 1922 crop was expected to reach 4,000 cars with about 2,000 cars to the territory north of that immediately adjacent to Laredo. There was also a considerable tonnage of cabbage and spinach. The I. & G. N. gets a large proportion of this production and, in addition, gets a long haul on the traffic because a large proportion of it moves to New York by rail, the I. & G. N. via Longview, having the short route to St. Louis. A small part of the tonnage moves to Galveston and

about 53 miles in the center of the Fort Worth division. The mileage of gravel ballast had been increased to 589; the shell ballast had been increased to 136; the cinder ballast was only 19, and stone had been reduced to a total of but 2. The attention given to track foundation is the outstanding improvement which has taken place in the International & Great Northern's physical conditions since receivership.

Rail

Considerable attention has been given to the matter of rail also, but far from the amount of attention that should be given this important factor. The report of the executive officer to the receiver for 1920 contains this important statement: "Approximately 300 miles of new 90-lb. rail should be provided, extending over a period not to exceed three years, for laying between Palestine and Houston, and Palestine and San Marcos, releasing 75-lb. rail for relaying on other portions of the line, particularly between San Antonio and Laredo." This indicates, at least, that there is still a large amount of work to be done and that this is one of the first things which the reorganized company will have to take care of.

However, it should be pointed out that there was some improvement made in this respect during the receivership.

ballasting; of course these cars can be used for revenue coal traffic as well. The above cars were the only new freight equipment which was acquired during the eight years of receivership.

The locomotive purchases were equally small. No new power was secured until October, 1921, when orders were placed for 4 Mikado locomotives and 4 six-wheel switching locomotives. In the rush of 1920 the road had to rent locomotives. The larger part of the road's motive power is of comparatively light weight. Prior to the purchase of the new locomotives just mentioned, the largest locomotives on the road were 16 Consolidations—22 in. by 30 in. cylinders with 182,000 lb. on the drivers. The road has made the best of what it has had in the way of motive power, however. In 1914 it did not have a single locomotive with a superheater; it has succeeded in putting superheaters on a considerable proportion of its locomotives; at present all of its heavier power is superheated, the actual figures being 48 superheated locomotives, including the eight new ones recently obtained. The locomotives on the road total 182.

The road needs new cars—that is, if its heavy per diem charges are any criterion. Further than that, it reported on May 1 a bad order car percentage of 18.1, which is rather high. Its percentage of locomotives held out of service for

INTERNATIONAL & GREAT NORTHERN OPERATING STATISTICS, 1912-1920

Year ended June 30	Freight revenue	Total operating revenue	Total operating expenses	Net operating revenue	Operating ratio	Revenue tons	Revenue ton miles	Average haul	Revenue per ton per mile, cents	Revenue train load	Revenue car load	Ton miles per mile of line
1912	\$7,408,670	\$10,389,499	\$7,585,832	\$2,809,999	73.01	3,269,554	583,658,153	179	1.269	205	13.51	.....
1913	8,074,686	11,284,772	8,572,700	2,712,102	75.97	3,896,793	695,410,511	178	1.161	223	14.96	.....
1914	7,024,295	9,963,408	8,062,467	1,900,940	80.92	3,556,382	580,827,567	163	1.209	215	13.60	500,929
1915	6,674,082	9,083,626	7,871,449	1,212,177	86.66	3,592,579	637,154,661	177	1.045	249	14.40	549,508
1916	6,869,511	9,420,291	7,339,224	2,081,067	77.91	3,767,900	680,160,833	181	1.010	271	15.66	586,599
Year ended Dec. 31												
1916	7,673,765	10,766,945	7,786,049	2,980,895	72.31	4,049,264	719,621,355	178	1.066	271	15.77	.....
1917	8,582,335	12,588,224	8,649,994	3,938,230	68.71	4,140,032	751,526,133	182	1.142	312	17.66	.....
1918	8,859,715	13,476,888	11,643,003	1,833,885	86.39	3,949,854	691,239,368	175	1.282	322	19.87	.....
1919	10,061,736	14,410,290	15,189,587	Def. 779,297	105.40	3,902,256	718,629,643	184	1.400	320	20.31	619,775
1920	13,988,645	19,514,093	20,027,879	Def. 513,786	102.63	4,973,659	922,502,143	185	1.516	336	21.10	795,603
1921	13,178,384	17,639,782	16,254,947	1,384,835	92.15	.....	.....	.....	.....	.....	.....	.....

On June 30, 1915, of the road's total owned mileage of 1,106, 4.7 miles were laid with 85-lb. rail, 37.6 with 80-lb. rail, 723.7 with 75-lb. rail, 14.2 with 70-lb. rail, 171.2 with 56-lb. rail, and 154.6 with 52-lb. rail. On December 31, 1920, the mileage of the different weights was as follows: 13.6 miles of 90-lb.; 66.1 miles of 85; 34.4 miles of 80-lb.; 700.3 of 75; 15.3 miles of 70; 171.5 miles with 56 and 124.8 miles with 52. The percentage of rail, 70-lb. or less, on June 30, 1915, was 30.8. On December 31, 1920, this had been reduced to 26.4. On June 30, 1915, the proportion of 75-lb. rail was 65.4, whereas on December 31, 1920, this had been changed to 63.3. In other words, the road has not made a very considerable amount of progress in improving its rail condition during these years. It is further of interest that all of the 52-lb. rail is to be found on the line between San Antonio and Laredo. This rail has been in track some 46 years.

Equipment Condition

On the first inspection trip which the officers took over the road after the creation of its receivership, they found that in addition to its poor ballast condition, the road had a poor equipment condition. There were found to be a large proportion of bad order cars and one of the first steps taken was the adoption of a program for their repair. In the latter part of 1915 it was deemed essential to secure a large number of new cars and there were purchased 500 steel frame box cars of 40-tons capacity, 200 steel underframe stock cars and 300, 50-ton combination ballast and coal cars. The purchase of the last named equipment is noteworthy because it shows the importance the new officers gave the matter of

repairs requiring over 24 hours on the same date was 13.8; this is considerably lower than the country's average on that date.

Increases in Train Load

The International & Great Northern in 1920 had a revenue train load of 336 tons. In the first report to the receivers, this statement occurs: "During the first year of the operation of the property by the receivers, strenuous efforts were also made to reduce the freight train miles by increasing the freight train loads. . . . Little attention seems to have been paid to this feature in the past, but a decrease in the freight train miles has been brought about in spite of an increased movement of freight traffic, and a material increase has been made in the net train loads. Statistical information for the operating officers, to enable them to know exactly what results they were getting in this respect, was sadly wanting. Amongst other things a weekly tonnage report has been compiled showing the weight of trains moved on each freight train district on all divisions, which is distributed promptly to superintendents, train masters and others in order that they may see the weak points and each see what the other is doing, thus creating the spirit of generous rivalry between divisions."

The work which was started at that time has been continued to the present with the result that in each year of the receivership there has been a steady and progressive increase in the average revenue train load. The average train load for the year ending June 30, 1914, was 215. In the first year of operation by the receiver this was increased 16 per cent, or 249 tons. In 1916 the average had become 271; in

1917, 312; in 1918, 322; in 1919, 320, and in 1920, 336. The revenue train load for 1921 is not yet available but there is available a figure of net tons per train, including both revenue and non-revenue freight, which shows for 1920, 413, and for 1921, an increase to 434.

The interesting feature is that these increases were brought about without the acquisition of new and heavier motive power; they were the result of improved operating supervision and a realization of the importance of this matter. The average train load for the International & Great Northern as compared with the other lines in the southwest is low. The figure of 434 net tons per train in 1921 compared with an average for the southwestern region of 514. The Gulf Coast Lines in 1921 had an average of 610; the Gulf, Colorado & Santa Fe, 468; the Missouri, Kansas & Texas, 473.

The road has had an increase in average car load similar to that which it has had in revenue train load. In 1914 its revenue tons per loaded car were 14.45. In 1920 this had increased progressively to 21.10. The 1921 figure for revenue car load is not available, but that for net tons per loaded car is; in 1920 the I. & G. N. had a net tons per loaded car of 24.5, and in 1921 of 24.7. The average for the southwestern region for the year was 25. Car miles per day in 1921 were 22.1 as against the average in the southwest of 22.9; in 1920, however, the I. & G. N. figure was 30.9 as against the region's average of 23.5. The locomotive miles per locomotive day in 1921 was 69.9 and in 1920, 92.8, whereas the average for the district was respectively 57.1 and 67.5.

Earning Power

An analysis of the International & Great Northern earning power is complicated by the factor of federal control and by the necessity of reconciling the results of the high costs of labor and material characteristic of the past three or four years. The road did not do well while it was being operated by the government. It had a standard return of \$1,394,946.

The International & Great Northern has practically no other income than that received from the operation of its own property. This brings us to the important fact that the government compensation of \$1,394,946 was about \$200,000 less than the interest charges on the property, which, for the past several years have run above \$1,500,000 annually and which, as of June 30, 1922, are placed at the exact figure of \$1,597,175. The fixed interest charges of the new company are set at \$1,179,000, a reduction from the present interest charges of \$418,175. The road has been operating at a deficit running from \$300,000 to \$400,000 and the evidence on the whole is that the property, even without any great expansion of traffic, should be able to earn its fixed charges without difficulty.

There is a certain interest in examining what the road did during the period of federal control, although the great improvement which has been made since that time gives these figures, at present, largely an academic interest only. The year 1917 was the best year in the company's history. It had a net after rentals in that year of \$3,254,787. In 1918, the first year of federal control, the road had a net railway operating income of \$1,378,645 or, in other words, it approximated its standard return. In 1919, however, there was a deficit of \$1,404,787, and in 1920, a further deficit of \$1,749,257, which latter deficit the government had to make up partly through standard return for two months and guaranty for six.

Difficulties in 1921

The year 1921 was not a good year for the company. It had a sharp falling off in traffic. In September it experienced an extremely severe storm in the San Antonio and Brazos Valley district which resulted in 72 washouts varying from 15 ft. to 5,000 ft. in length. The traffic was restored

in eight days, but the operating expenses were increased \$225,000 for repairing the damage and the road, in the meantime, lost a considerable volume of traffic which it otherwise might have carried. The International & Great Northern had a private train service strike of its own at the time of the general strike threat last November. Nevertheless, even with all these difficulties, the road came through the year with a deficit after rentals of \$324,441; a deficit to be sure, but an amount \$1,400,000 less than the deficit in 1920.

The corporate income account for 1921, when it is issued in the near future, will very likely make a poor showing for the year but this will be explained by the special conditions of a very trying year, the like of which presumably will not be experienced again in the same degree. The matter of revenues and expenses is complicated by the varying freight rates and varying costs. Because of this situation it seems hardly advisable to attempt an analysis of the figures. They are, however, given in the table in some detail. The revenues show the usual increase over a term of years resulting from a combination of increased traffic and an increased rate per ton per mile, whereas the expenses show a similar or even greater increase due to increased labor and material costs.

An interesting feature is the operating ratio. In 1914 this was 80.92; in 1915, 86.66, but in 1916 it reduced to 72.31, and in 1917, to 68.71. It increased in 1919 to 105.40. In 1921 the figure was 92.15.

J. W. Kendrick's Opinion

J. W. Kendrick, in his communication which is included with the reorganization plan, estimates that the property should be able, in 1923, to have a net income available for interest and dividends of \$3,031,512; in 1924, of \$3,178,135, and in 1925, of \$3,326,821. "If my recommendations with respect to operation and management are adopted," he says, "it will in my judgment be practicable to operate the road for not to exceed 76 per cent of its operating revenue, as stated in my report. Allowing eight per cent for taxes, hire of equipment and rental of joint facilities, in accordance with the results that have been obtained in the past, 16 per cent of the gross earnings would be available for interest charges and dividends."

Mr. Kendrick adds: "There is absolutely no reason why the results indicated in my report cannot be obtained, or why the International & Great Northern System cannot take a place with the best of the southwestern and Texas railroads as far as quality and economy of its operation are concerned."

At present the International & Great Northern is doing very much better than it did at this time last year. It operated in March with a net after rentals of \$61,701 as compared with a deficit in March of 1921 of \$178,005. For the three months it had a net after rentals of \$87,853 as compared with a deficit in the first three months of 1921 of \$534,112. Its operating ratio in March was 84.7; for the three months, 88.1.

THE GASOLINE purchased by the Illinois Central in 1921 was enough to have run an automobile, at the rate of 20 miles to the gallon, more than 400 times around the earth. It would keep the car going continuously 24 hours a day at 20 miles an hour for more than 50 years.

THE INTERNATIONAL BROTHERHOOD OF LOCOMOTIVE FIREMEN AND ENGINEERS has been holding a convention in Houston, Tex., which, it is estimated, has cost \$52 a minute. There was one delegate present from each of the 904 lodges and his pay was \$8 a day besides expense money amounting to \$6. The convention of this organization in 1919, which was held in Denver, Colo., cost more than \$600,000. It was in session 32 working days.

General News Department

The Freight Claim Division of the American Railway Association will hold its thirty-first annual convention at Denver, Colo., June 20, 21 and 22.

Clifford Thorne, of Iowa, ran for the United States Senate in the Republican primaries in that state on June 5. The votes, when counted, showed that he came in a poor second. He received less than one-fifth of the total number of votes cast and less than 40 per cent of the number received by the successful candidate.

Fines Amounting to \$500 and costs were imposed on the New York, New Haven & Hartford Railroad in the Federal Court at New Haven, Conn., on June 1, for violation of the hours of service law in connection with working time of trainmen. The government brought suit on 12 counts, but on seven of them the prosecution was abandoned.

President W. G. Lee of the Brotherhood of Railroad Trainmen has been re-elected, defeating Vice-Presidents Fitzpatrick and Whitney. W. N. Doak, vice-president, was elected senior vice-president to succeed Mr. Fitzpatrick. T. R. Dodge, assistant to president; A. E. Kind, general secretary and treasurer, and D. L. Cease, editor, were re-elected by acclamation. Messrs. Lee and Dodge have been officers of this organization uninterruptedly for 27 years, and secretary King for 25 years.

The Newfoundland Railway resumed train service on May 23, after a suspension of eight days, owing to lack of funds to pay the wages of the trainmen. The management of the road said that the financial difficulty was due to the neglect of the government to make payments which had been agreed upon. It appears that the resumption of service follows a temporary advance of money by the government, made with the expectation that a permanent settlement of the difficulty would be reached by June 3.

The California Limited, No. 3, westbound, and the "Scout," No. 10, eastbound, of the Atchison, Topeka & Santa Fe, collided about 4 a. m. on May 29, near the bridge across the Mississippi river opposite Fort Madison, Iowa, and the engineman of the Limited and the fireman of the "Scout" were killed. The two other members of the engine crews sustained severe injuries and a number of the passengers received minor injuries. Both engines and two baggage cars were derailed and badly damaged. Preliminary investigation indicates that the collision was due to the westbound train running past a stop signal.

The Wrecking of an Automobile on a crossing by the westbound Pacific Express, No. 7, of the Erie Railroad, in Binghamton, N. Y., on the morning of June 6, resulted in the serious scalding of the engineman and fireman, burning gasoline having been thrown over them at the moment of collision by the explosion of the tank of the automobile. The automobile was a truck, stopped on the crossing because of an obstacle in the shape of an ash cart, and the driver and two other men on the truck were killed. The report that the locomotive was derailed in this accident appears to have been incorrect.

Columbus & Greenville Abandons Branch Line

Train service over the Webb branch (34 miles in length) of the Columbus & Greenville, was discontinued on May 27, the Mississippi Railroad Commission having granted authority for the abandonment. Very little traffic has been handled over this line in recent years, except during the cotton season. An application is now pending in the federal court for authority to sell the road at public auction. A meeting of the citizens of Lefflore county who are served by the Webb branch was held last week and steps were taken to raise the necessary funds to purchase the line.

Station Agents to Meet

The Freight station Section of the American Railway Association, formerly the American Association of Freight Agents, will hold its annual meeting at the Bellevue-Stratford hotel, Philadelphia, Pa., beginning on June 20. The program for this meeting, besides the reports from both the standing and special committees, provides for a list of topics on which sectional organizations have prepared papers for a general discussion.

Imprisoned Trainmen Pardoned

Charles L. Evans and Walter Yeakel, conductor and engineman, who in March last were sentenced to imprisonment—9 months and 6 months respectively—and were fined \$500 each, on account of their responsibility for the disastrous collision on the Philadelphia & Reading at Woodmont, Pa., on December 5, 1921, were pardoned by the governor of Pennsylvania on May 31. The action of the governor was recommended unanimously by the State Pardon Board, following an inquiry in which the railroad company signified its willingness to give employment to the two men. It is said that the jury which convicted Evans and Yeakel was out all night and took more than 200 ballots.

Unions May Be Sued for Damages

The United States Supreme Court on June 5 handed down a decision to the effect that under sections 7 and 8 of the Sherman anti-trust law labor unions are suable; and that actions may be brought against them for damages for which they may be responsible by illegal conduct in connection with strikes. The court held that funds collected for strike purposes are assessable to pay the damages. This decision was rendered in the case of the United Mine Workers of America against the Coronado Coal Company of Arkansas. The court held, however, that in this case the national organization was not responsible for the damage and it ordered a retrial of the case against the district organization of the union.

Officers of Master Boiler Makers' Association

At the Thirteenth Annual Convention of the Master Boiler Makers' Association, which was held in Chicago on May 23-26, the following officers were elected: president, Thomas Lewis, general boiler inspector, Lehigh Valley, Sayre, Pa.; first vice-president, E. W. Young, general boiler inspector, Chicago, Milwaukee & St. Paul, Dubuque, Ia.; second vice-president, Frank Gray, general foreman boiler maker, Chicago & Alton, Bloomington, Ill.; third vice-president, Thomas F. Powers, assistant general foreman, boiler department, Chicago & North Western, Oak Park, Ill.; fourth vice-president, John F. Raps, general boiler inspector, Illinois Central, Chicago; fifth vice-president, W. J. Murphy, general foreman boiler maker, eastern region, Pennsylvania System, Allegheny, Pa.; secretary, Harry D. Vought, 26 Cortlandt street, New York; treasurer, W. H. Laughridge, general foreman boiler maker, Hocking Valley, Columbus, Ohio.

Decision in Stoker Infringement Suit

In the suit brought by the Locomotive Stoker Company against the Elvin Mechanical Stoker Company in the United States District Court for Delaware a decision has recently been rendered by Judge Morris which sustains the claim of infringement advanced by the Locomotive Stoker Company under its Street Patent No. 1,130,443. Claims 1 and 2 of this patent were urged and both of them were held valid and infringed by the Elvin Stoker. These claims read as follows:

1. In a locomotive, the combination with the boiler furnace and its firing door of a mechanical stoker apparatus mounted on the locomotive and comprising a fuel receptacle below the firing door, an elevator for conveying the fuel from said receptacle

to a point above the level of the fuel bed, and means for delivering the fuel therefrom into the furnace.

2. In a locomotive and tender, the combination with the boiler furnace of a mechanical stoker apparatus mounted on the locomotive and comprising a fuel receptacle below the firing floor, means below said floor for delivering fuel from the tender into said receptacle, an elevator for conveying the fuel from said receptacle to a point above the level of the fuel bed, and means for delivering the fuel therefrom into the furnace.

Judge Morris also decided that the Gee Patent No. 1,082,419, which was involved in this suit, was not infringed, and dismissed the bill as to it. The Elvin Mechanical Stoker Company states that it will take an appeal from the decision, as to the Street patent.

Program of Purchases and Stores Meeting

The program of the third annual meeting of Division VI—Purchases and Stores, American Railway Association, which will be held at the Hotel Traymore, Atlantic City, N. J., June 19, 20 and 21, is as follows:

MONDAY, JUNE 19

Opening exercises, including addresses by R. H. Aishton, president, American Railway Association; W. G. Besler, first vice-president, American Railway Association; Elisha Lee, vice-president, Pennsylvania System, Eastern Region; and by the chairman of the Division, H. E. Ray, general storekeeper, Atchison, Topeka & Santa Fe.

Reports of the following committees:

General committee.

Subject 1, Stores Department Book of Rules.

Subject 2, Classification of Material.

Distributing and Accounting for Gasoline, by L. V. Hyatt.

TUESDAY, JUNE 20

Reports on

Subject 4, Material Accounting and Mechanical Facilities.

Subject 21, Unit Piling of Materials and Numerical Numbering System (moving picture illustration of unit piling).

Subject 16, Supply Train Operation.

Subject 10, Scrap Classification—Handling and Sales.

Subject 12, Purchasing Agents' Office Records.

Subject 3, Reclamation of Material.

Inventories, by D. C. Curtis.

WEDNESDAY, JUNE 21

Reports on

Subject 13, Forest Products.

The Need of a Sinking Fund to Care for Deterioration, Obsolescence and Other Losses Incidental to the Handling, Use and Distribution of Materials, by H. H. Laughton.

Subject 15, Buildings and Structures and Facilities.

Office Routine in Purchasing and Stores Departments, by E. W. Thornley.

Stationery, Including Repairs to Typewriters, by C. B. Tobey.

Educating Employees of the Store Department for Their Duties, by A. S. McKelligon.

The Human Equation in Railway Service of Supply, by M. J. Wise.

Subject 19, Fuel Conservation Joint Committee.

Report of Memorials Committee.

Election of officers.

The meetings will convene sharp at 9:00 a. m. Morning sessions only will be held, in order that the members may have ample opportunity for visiting the exhibits on Young's Million Dollar Pier.

"Prosperity Special" Attracts Crowds

The "Prosperity Special," the train of 20 monster locomotives (reported in the *Railway Age* of June 3) which was sent from the Baldwin Locomotive Works, Eddystone, Pa., on May 26, to the Southern Pacific Company, reached East St. Louis, Ill., on schedule and is now on the second lap of its journey which will end at Corsicana, Tex., where the locomotives will be turned over to the Southern Pacific. In Pennsylvania and Ohio, along the route followed by this half-mile train, thousands of men, women and children, including state and city officials, school

teachers and students, members of chambers of commerce, boards of trade, manufacturers, etc., were on hand to see the train as it went by. At Mansfield, Ohio, the train stopped a half hour while the Chamber of Commerce, manufacturers and school children in a body conducted a review. At Fort Wayne, the engines were placed at Schiney Park where a grand stand and music pavilion had been erected. Here the president of the Indiana Chambers of Commerce addressed 4,000 people. At Indianapolis the locomotives stood at the passenger station over the week end and a "prosperity" celebration was held at which Governor McCray of Indiana and former Senator A. J. Beveridge of that state spoke. Similar celebrations occurred at numerous other stops. At St. Louis the train was transferred from the Pennsylvania to the St. Louis Southwestern. A luncheon was served on Tuesday to railroad officials, state and city authorities and leading manufacturers, following which motion pictures were taken of these men in official review of the train. The train left East St. Louis on June 7 and travelled by the main line of the Cotton Belt through Jonesboro, Ark., Pine Bluff, and Texarkana. It is scheduled to arrive at Corsicana on June 12.

April Earnings 3.93 Per Cent

The railroads in April had a net operating income of \$50,256,800, which on an annual basis represented a return of 3.93 per cent on their tentative valuation, according to reports filed with the Interstate Commerce Commission. In April, last year, their net operating income amounted to \$29,856,600, or at the annual rate of return of 2.33 per cent, while in March this year it was \$83,511,400, or 5.83 per cent.

The tabulations are based on reports filed by 201 Class I railroads, having a total mileage of 236,167 miles.

Operating revenues in April totaled \$416,853,600, or 3.8 per cent less than for the same month last year; operating expenses \$336,178,400, or 10½ per cent reduction.

Fifty-nine roads—28 in the Eastern district, 2 in the Southern and 29 in the Western—had operating deficits in April. In March, there were 36.

For the first four months this year, the net operating income of the railroads totaled \$211,278,394, compared with \$57,408,900 during the same period last year. This is at the annual rate of return of 4.36 per cent, compared with 1.18 per cent during the first four months in 1921.

By districts the operating revenues for April were: Eastern, \$206,104,100, a reduction of 2.8 per cent; operating expenses, \$165,773,700, a reduction of 9.4 per cent; net operating income, \$26,607,700, or at the annual rate of 4.42 per cent.

Southern, operating revenues, \$57,571,000, an increase of 1.3 per cent; operating expenses, \$43,875,900, a decrease of 12.3 per cent; net operating income, \$9,712,300, or at the annual rate of return of 5.62 per cent.

Western, operating revenues, \$153,178,300, a decrease of 6.9 per cent; operating expenses, \$126,528,770, a decrease of 11.4 per cent; net operating income, \$13,936,700, or at the annual rate of return of 2.76 per cent.

New Merger of Three Steel Companies

Announcement is made of the adoption of a plan by which the properties of the Midvale Steel & Ordnance Company, the Republic Iron & Steel Company, and the Inland Steel Company will be unified in the ownership of the Midvale Steel Company, whose name will be changed to the North American Steel Company, or some other appropriate name. The terms of the plan are as follows: All existing obligations of the three companies are to be assumed by the unified company. Existing preferred and common stocks will be changed into preferred and common stocks of the unified company. The new preferred stock is to have a par value of \$100 per share, is to be 7 per cent cumulative, is to be redeemable at \$115 per share and accrued dividends, and is to be convertible for twelve years into new common stock at the rate of five shares of new common for four shares of new preferred. The common stock is to be without par value.

All assets of the three companies are to be owned by the unified company, except the Nicetown plant (the armor-making, ordnance and forging plant) of the Midvale Steel Company, which is to be transferred to a separate company with a capital of 500,000 shares without par value.

Participation in the new stock will be as follows:

Under the plan Midvale Company stockholders are to receive 75 per cent in new common stock and 25 per cent in stock of the company formed to take over the Nicetown plant.

Republic Iron & Steel preferred stockholders are to receive dividends in cash up to the date when the new preferred dividend begins to accrue, and 100 per cent in new preferred stock.

Republic Iron & Steel common stockholders are to receive 170 per cent in new common stock.

Inland Company stockholders are to receive 25 per cent in new preferred stock, which is to be purchased from them at \$95 per share, and 70 per cent in new common stock.

It is intended to provide \$20,000,000 additional cash working capital by the sale of common stock. Negotiations are pending for the acquisition of other properties, but, irrespective of the outcome of these negotiations, Midvale, Republic Iron & Steel and Inland propose to proceed with the plan. Messrs. Kuhn, Loeb & Co. have agreed to act as bankers for the plan.

A statement was subsequently sent to the stockholders of three companies, in part as follows: It is proposed that the Midvale and Inland companies will consolidate and merge and take the name North American Steel Corporation. This corporation, hereinafter called the company, will acquire, subject to its liabilities, the assets of the Republic Company. Before the unification of the properties, Midvale will place its Nicetown plant and certain assets and liabilities connected with the operation of it in a separate corporation, stock of which will be distributed pro rata among the stockholders of the Midvale company, as hereinafter stated. This separate corporation will thereafter continue as a separate enterprise for the manufacture of the ordnance, armor plate and special steel products to which it is adapted.

Upon the consummation of the plan, the issued capital will be as follows: Bonds and other fixed charge obligations, \$79,173,500; new preferred stock of \$100 par value, \$50,331,475; shares of new common stock without par value, \$3,309,612.

The \$79,173,500 bonds and fixed charge obligations will consist of \$60,599,500 bonds and guaranteed obligations of the Midvale Company, or its subsidiaries; \$13,357,000 bonds and other obligations of the Republic Company or its subsidiaries, and \$5,217,000 bonds and other obligations of the Inland Company, all of which, in addition to the other liabilities of the three corporations, are to be assumed by the company.

The \$50,331,475 preferred stock is to be 7 per cent cumulative and is to be convertible until July 1, 1934, into common stock at the rate of four shares of preferred stock for five shares of common. It is to be redeemable at the option of the company at 115 per cent and accrued dividends. Of the amount to be presently issued, \$25,000,000 par value is to be issued to provide in part for the acquisition of the properties of the Republic Company, and \$25,331,475 par value is to be issued and the proceeds thereof, amounting to \$24,064,901, is to be paid by the company to the stockholders of the Inland Company.

The 3,309,612 shares of no par value common stock are to be issued as follows: To Midvale shareholders, 1,500,000 shares; to provide in part for the acquisition of the properties of Republic Iron & Steel Company, 510,000 shares; to inland shareholders, 709,281 shares; to be sold for cash, 590,331 shares.

On completion of the plan, each holder of one share of stock of Midvale Company will be entitled to receive: (1) Three-fourths of a share of the new common stock; and (2) one-fourth of a share of stock of the corporation which is to take over the Nicetown plant. Each holder of one share of stock of the Inland Company will be entitled to receive: (1) \$23.75 in cash, and (2) seven-tenths of a share of the new common stock. Each holder of one share of stock of the Republic Company will be entitled to receive: (1) with respect to each share of preferred stock, one share of new preferred stock and an amount of cash necessary to provide for the then unpaid dividends on such preferred stock of the Republic Company; (2) with respect to each share of common stock, one and seven-tenths shares of new common stock.

It is intended that a syndicate will be formed to provide for the cash requirements of the plan, including the provision of \$20,000,000 additional cash working capital, which will make the total working capital of the company over \$100,000,000.

Messrs. Kuhn, Loeb & Co. have agreed to act as bankers for the plan. The plan contemplates that the company will sell to Mr. Thomas L. Chadbourne, for services rendered, 25,500 common shares at \$10 per share, and to Messrs. Kuhn, Loeb & Co., 59,500 common shares at \$10 per share.

It is estimated that upon the consummation of the plan, the fixed charges of the company will amount to \$3,913,085 per annum (which is about 74 cents per ton of rated ingot capacity) and the preferred stock dividends to \$3,523,203 per annum (which is about 67 cents per ton of rated ingot capacity). The total rated ingot capacity of the company will be 5,249,000 tons per annum.

The book value as of December 31, 1921 (which is far below the present replacement figures) of total net assets of the Midvale, Republic and Inland companies, including the \$20,000,000 new cash working capital (but excluding the Nicetown plant) totals about \$284,000,000.

The earnings of these three companies (exclusive of the Nicetown plant earnings) applicable to dividends on the preferred and common stock, that is, after deduction of bond and other interest, federal and other taxes and adequate depreciation, as compiled from the annual accounts for the ten years ending December 31, 1921, averaged \$20,462,248 per annum and were as follows:

1912.....	\$7,435,421	1917.....	\$60,257,399
1913.....	10,164,892	1918.....	34,598,221
1914.....	3,379,545	1919.....	11,612,487
1915.....	13,702,110	1920.....	22,429,534
1916.....	52,595,325	1921.....	(Loss) 11,552,446

Since the year 1916 the three companies have expended more than \$120,000,000 for improvements and additional facilities, greatly increasing capacity and reducing operating costs so that the earnings reported for the past ten years do not fully reflect the earning power of the three companies as now situated.

Traffic News

The Southern Pacific reports the shipment from San Francisco for New York on June 4, of a trainload of silk, 351 tons, en route from Japan. This silk is valued at \$5,600,000, and occupies 19 cars.

Senator Capper of Kansas has introduced in Congress a bill to repeal Section 28 of the Jones merchant marine act, which provides that preferential rates by railroad on export and import freight shall be restricted to traffic carried on the ocean by American vessels. The Shipping Board is now holding hearings in various parts of the country regarding the method of enforcement of this provision of the law.

The Federal Sugar Refining Company of New York has entered suit in the Hudson County Supreme Court at Jersey City, N. J., against the Lehigh Valley Railroad to recover \$611,331 for sugar lost in the Black Tom explosion and fire of July 31, 1916. The refining company contends that the railroad was negligent in allowing the sugar to be stored at Black Tom when it was known there was danger of an explosion.

The movement of coal from the mines on the Cumberland Valley division of the Louisville & Nashville, which has been very heavy since the beginning of the countrywide strike in the bituminous mines, broke all records on May 29, the number of cars sent to Cincinnati on that day totaling 1,229. In normal times the number of cars loaded daily at the mines on the Cumberland Valley division is about 800.

Coastwise steamship lines operating between New York and Gulf of Mexico ports expect a lull in freight until July 1. These lines, while carrying freight generally at a lower rate than do the rail carriers, are similarly affected by the cut and shippers who ordinarily maintain a steady flow of commodities will probably hold off until the new rates become effective. After July 1, according to a representative of one of the larger coastwise lines, there is prospect of a very large business. Representatives in the south have been sending excellent reports as to prospects for the summer and fall business.

Observation cars are to be restored on August 1 on the fastest limited trains of the Pennsylvania System running between New York, Philadelphia, Baltimore and Washington on the east, and Chicago and St. Louis on the west. These cars were discontinued as a war measure in December, 1917. The trains are the Broadway Limited, east and west bound, the St. Louisan, and the New Yorker. Observation cars will be continued in service until December 1, when they will be withdrawn for the winter. A similar improvement is announced for the Twentieth Century Limited, of the New York Central.

Coal Production

The ninth week of the coal strike (May 29-June 3) will show a decrease in production, largely because of the observance of Memorial Day, according to the Geological Survey. The returns so far received point to an output of between 4,550,000 and 4,750,000 tons. Production of anthracite remains practically zero.

For the eighth week (May 22-27) complete returns indicate an output of 4,856,000 tons of bituminous coal and 10,000 tons of anthracite.

Loadings on Monday of the ninth week were 15,082 cars, the largest for any Monday since the strike began. Following is the daily record:

	1st week	5th week	7th week	8th week	9th week
Monday	11,445	11,598	13,366	14,772	15,082
Tuesday	11,019	12,160	12,830	15,085	11,142
Wednesday	11,437	12,861	13,422	14,677	15,097
Thursday	11,090	12,487	13,445	14,573	13,823
Friday	11,296	12,778	14,036	15,202	.....
Saturday	8,888	11,265	12,357	12,662	.....

No great change in the number of men on strike has yet occurred. Production is increasing very slowly in the Connells-ville region, and more rapidly in southeastern Kentucky and Tennessee.

Commission and Court News

Interstate Commerce Commission

The Interstate Commerce Commission has issued a decision finding rates on grain, grain products, hay and straw and related articles taking the same rates or rates basing thereon from points in Oklahoma to points in Texas to be unreasonable and unduly prejudicial and it has prescribed a scale of reasonable and non-prejudicial rates.

The commission has suspended from June 1 until September 29 the operation of schedules, which propose increases in rates on hosiery from Beaver Dam and Waupun, Wis., to Ohio River points, Elkhart, Indianapolis and Terre Haute, Ind. The present rate to Ohio River points is 70 cents per hundred pounds. The proposed rates range from 101½ to 128½ cents per hundred pounds.

Potato Embargo Cancelled

Division 5 of the Interstate Commerce Commission, Commissioners Aitchison and Potter sitting, held an informal conference on June 5 with representatives of the Pennsylvania Railroad, of the Port of New York Authority, and other New York interests upon a protest filed by the Port of New York Authority against an embargo issued by the Pennsylvania Railroad against the delivery of potatoes at Pennsylvania stations in New York, Jersey City and Brooklyn, to go into effect at midnight on June 5.

A similar embargo was levied about two weeks ago and was cancelled, before becoming effective, at the request of New York interests.

After full discussion Division 5 expressed the opinion that the embargo ought not to be retained without further conference because it would seriously disrupt long established conditions. It suggested that the embargo be cancelled and that suggestion was accepted by the Pennsylvania under protest.

The commission's director of its Bureau of Service, John C. Roth, will investigate the situation on the ground.

The embargo was ordered because of serious congestion at the principal delivery piers, the total number of cars of potatoes received by the Pennsylvania at New York in the month of April having been more than 5,000. To relieve this congestion the road has just established a new delivery yard at Kearney, N. J., about five or six miles west of New York, and had requested consignees to send their trucks to that place for their freight. Potato merchants, in their protest, complain that such a change in the place of unloading would be very costly to them, and express doubts as to whether the ferryboats could accommodate the large number of trucks which would be necessary to move their wagons. They complain also that the railroad is offering no reduction in the transportation rates while it would shorten its haul about five or six miles. The Port Authority is trying to provide additional pier room for delivery of perishable freight, so as to relieve the congestion at piers 27, 28 and 29.

Court News

Application of Florida Fencing Law

Injury to animals from failure to fence makes the railroad liable under the Florida fencing statute only when the injury is inflicted by the operation of the company's engines, cars or trains. The statute does not apply to an injury to a horse whose foot was caught in a defective switch connecting a main and a side track while the horse was attempting to cross the tracks.—S. A. L. v. Coxetter (Fla.), 90 So. 469.

United States Supreme Court

The Supreme Court of the United States on June 5, at the request of counsel for the Southern Pacific, granted leave to file within 60 days a petition for a rehearing in the Southern Pacific-Central Pacific merger case.

Labor Board Decisions

Pay of Foremen While Gang Is Laid Off

A case arose on the Buffalo, Rochester & Pittsburgh in connection with an extra gang that was laid off one day each week, the foreman contending that he was exempt from deductions from his monthly pay on this account. The decision of the board is that if the foreman is compensated on a monthly basis for all service rendered, including time worked in excess of the regular working hours or days assigned, he should receive not less than the monthly rate so established, provided he was ready and available. If on the other hand the foreman is compensated on the monthly basis but is paid overtime for work performed after eight hours and for all work performed on Sundays and holidays, no valid claim can be made for time lost under the provisions of Section 8 Article V of the agreement.—Decision No. 896.

Back Pay for State Holiday

Members of the Brotherhood of Railway and Steamship Clerks, etc., employed by the Southern Pacific at freight stations in San Francisco, requested back pay for "Admission Day," September 9, 1921, on which date they were notified not to work, the day having been proclaimed a holiday by the governor of California. The Labor Board quoted rules 56 and 64 of the clerks' national agreement in which seven holidays are listed of which either the employees or the employer may take advantage, unless other holidays are mutually agreed upon. The Board believed that the carrier would have been well within its rights in seeking the employees' concurrence in treating Admission Day as a holiday. However, in the absence of any such agreement, the Board decided that the daily-rated employees involved in this dispute are entitled to pay for that day.—Decision No. 960.

No Overtime for Employees Required

to Sleep on the job

A case was recently presented to the Labor Board in which two employees of the American Railway Express Company requested overtime pay for sleeping in the express office each night for a period of approximately six months. The employees say that they were required to spend the nights in the office of the company in question at Rouses Point, N. Y., after the expiration of their regular day assignment. They were required to report every night at 11:30 p. m. to sign for all valuables which were to be delivered to morning trains and to remain at the office in charge of fires, lights, etc., until 6 a. m., the time their regular tour of duty commenced. The employer contended that for a number of years it had been the custom to have employees at certain offices remain in the building at night in the capacity of guards. Suitable and proper quarters are furnished free of charge to employees agreeing to this arrangement. The carrier further stated that this proposition was fully understood by all employees who availed themselves of these sleeping quarters. The Railroad Labor Board denied the claim of the employees.—Decision No. 907.

Train Dispatcher Ordered Reinstated

A case was brought before the Labor Board by the American Train Dispatchers' Association requesting the re-instatement of a dispatcher at Pine Bluff, Ark., who had been dismissed by the St. Louis Southwestern on September 27, 1920, for alleged responsibility in connection with a failure to issue a slow order and which failure was said to have resulted in a derailment. Testimony developed that about 8 p. m. September 13, 1920, a message was filed at Camden, Ark., directing the issuance of a slow order requiring all trains to reduce speed to 10 miles an hour, three to five poles south of M. P. 325. It was claimed that the message was not transmitted to the relay office at Pine Bluff until 10:35 p. m. and that it lay in the latter office until 11:45 p. m. when it was delivered to the night chief dispatcher. It was then claimed that the message was placed before the second

trick dispatcher (who was dismissed from the service) or the third trick man. The second trick dispatcher consistently denied having seen it and the night chief did not state definitely that he placed the message before the second trick dispatcher. The carrier claimed the Labor Board had no jurisdiction in this dispute but the board decided that it had, and ordered the second trick dispatcher to be re-instated with seniority rights unimpaired; and that he be reimbursed for pay lost, less any amount earned in other employment.—*Decision No. 967.*

Sheet Metal Workers in M. W.

Department Included in Shop Crafts

The Federated Shop Crafts brought before the Labor Board the cases of two employees in the maintenance of way department of the Northern Pacific who were working under the master carpenter, contending that these men should be classified as sheet metal workers and should be represented by the federated shop crafts. Both men were rated as bridge carpenters, one doing tinner's work and the other pipe work in connection with water service. The road contended that these employees performed other mechanic's work as it was assigned to them from day to day. The Labor Board ruled that these men are sheet metal workers in the sense in which this term is commonly understood, and that they come properly under the jurisdiction of the Railway Employees' Department of the Federated Shop Crafts. Dissenting opinions were filed by J. H. Elliott and Horace Baker. In the dissenting opinions it is pointed out that these men have been employed in the bridge and building department for several years. The fact was also emphasized that the character of the work there and of that done in the locomotive department are entirely different and that the line of demarcation between employment in these departments has long been kept distinct. In their opinion the ruling of the Labor Board will create confusion between the work of the two departments.—*Decisions 946 and 947.*

Rules Can Be Revised Only by Agreement

In June, 1921, the Chicago Great Western announced its intention of abrogating the existing rules governing its clerical and station employees, which intention was carried out the following month. The employees state that a majority of their number are members of the Brotherhood of Railway and Steamship Clerks, etc.; that the rules promulgated were not agreed upon by the railroad and representatives of the employees, or established in accordance with the provisions of the Transportation Act; and that a conference was held between representatives of the employees and the management which the latter soon terminated with a statement that it did not propose to have another signed agreement similar to that of March, 1920. In the original submission to the Labor Board, the employees requested that the rules of the clerks' national agreement be restored, but at the hearing this request was amended to the restoration of rules of the agreement dated March 30, 1920, pending a conference. The carrier contends that it has never had any contract relations with the brotherhood in question, nor does it admit that such an organization has the privilege to legislate or make agreements for all or even a majority of the employees concerned; that a committee from the brotherhood stated in conference that it was prohibited from consenting to any changes in the existing rules, except those in the form of further concessions from the carrier; and that the committee further refused to approve a continuation of the rules that had been in effect since January 1, 1920, in the form that the management was willing to confirm, thereby forcing the latter to publish the new set of rules; which it believed to be just and reasonable. The carrier further contended that since the publication of its new set of rules there has been no indication on the part of the employees that the rules incorporated therein are unjust or unreasonable and that, therefore, a dispute within the meaning of the Transportation Act does not exist between the parties in question. In its decision the Labor Board stated that the carrier acted without authority when it published a new set of rules in lieu of the agreement of March 30, 1920, and that the matter should have first been referred to and decided upon by the Labor Board. Therefore the agreement of March 30, 1920, is still effective until changed by an agreement with the employees in the manner provided by law.—*Decision No. 963.*

Foreign Railway News

The American Monument to Brazil

Brazil will celebrate the centennial of her freedom by an international exposition to be held at Rio de Janeiro beginning September 1. The principal nations of the world will be officially represented, the United States government having appropriated \$1,000,000 for America's exhibits and official expenses. In connection with the exposition American friends of Brazil—especially those who have had commercial dealings there—are planning to give a monument to the country as a token of friendship. This monument is shown in the accompanying illustration. The large figure is called "Amicitia," the Latin word for friendship, typifying



"Amicitia"

the good feeling which exists between Brazil and our country. In one hand she bears a laurel wreath and in the other the flags of the two nations. The smaller figures represent four patriots—Washington and Lincoln of our country and Jose Bonifacio and Rio Branco of Brazil. The committee looking after the details of the presentation of this monument is made up of such men as Samuel Vauclain, C. M. Muchnic, Judge Elbert H. Gary, Newcomb Carlton, Kermit Roosevelt and others. Americans who wish to be represented among the contributors toward this project may make the necessary arrangements through John L. Merrill, president of All America Cables, Inc., 89 Broad street, New York.

Equipment and Supplies

Locomotives

NEW YORK, CHICAGO & ST. LOUIS contemplates buying about 10 locomotives.

THE CENTRAL OF BRAZIL has ordered one Pacific type locomotive from the American Locomotive Company.

THE CENTRAL OF GEORGIA has ordered 2 Mountain type locomotives from the American Locomotive Company.

THE MISSISSIPPI CENTRAL is having one locomotive repaired in the shops of the American Locomotive Company.

THE WESTERN MEAT COMPANY (Swift & Co., Chicago) has ordered one 0-6-0 type locomotive from the American Locomotive Company.

THE BOYNE CITY LUMBER COMPANY, Boyne City, Mich., has ordered one 2-6-2 saddle tank locomotive from the American Locomotive Company.

Freight Cars

THE MISSOURI PACIFIC is inquiring for 250, 50-ton ballast cars.

THE PHILADELPHIA & READING contemplates buying about 1,000 gondola cars.

THE WESTERN PACIFIC is said to be considering the purchase of a large number of refrigerator cars.

THE ST. LOUIS SOUTHWESTERN is reported to be contemplating purchasing new equipment next month.

THE ASSAM-BENGAL RAILWAYS (India) are inquiring through the car builders for 250, 12-ton box cars.

THE INDIAN STATE RAILWAYS are inquiring through the car builders for prices on 250 four-wheel steel box cars.

THE CHICAGO, MILWAUKEE & ST. PAUL is reported to be contemplating the early purchase of 2,000 refrigerator cars.

THE CHICAGO GREAT WESTERN is inquiring for 500 box cars and will have repairs made to 527 miscellaneous type box cars.

THE UNITED STATES METALS REFINING COMPANY has ordered 7 dump cars of 20 tons' capacity from the Magor Car Corporation.

THE WABASH is now inquiring for 1,500, 40-ton steel under-frame automobile box cars; also for 2,050, 50-ton gondola car bodies.

THE NASHVILLE, CHATTANOOGA & ST. LOUIS is inquiring for 500 box cars and 150 stock cars of 40 tons' capacity and for 100 flat cars of 50 tons' capacity.

THE NEW YORK, CHICAGO & ST. LOUIS will receive bids until June 12 for 1,000 single sheathed automobile cars and for an alternative of 1,000 double sheathed box cars.

THE BALTIMORE & OHIO, reported in the *Railway Age* of May 27 as inquiring for 500 box car bodies, has ordered 1,000 box car bodies from the Standard Steel Car Company.

THE ROXANA PETROLEUM CORPORATION, St. Louis, Mo., has ordered 25 insulated tank cars of 40 tons' capacity from the General American Tank Car Corporation. The cars will hold 8,000 gal.

THE PENNSYLVANIA SALT MANUFACTURING COMPANY, Philadelphia, has ordered 10 chlorine tank cars of 15 tons' capacity equipped with 40-ton trucks, from the General American Tank Car Corporation.

THE CHESAPEAKE & OHIO, noted in the *Railway Age* of May 13 as inquiring for 500 ventilated box cars of 40 tons' capacity, has ordered this equipment from the Newport News Shipbuilding & Dry Dock Company.

THE ERIE, reported in the *Railway Age* of May 27 as asking for prices on the repair of about 3,000 cars, will have 1,000 box cars repaired by the Standard Steel Car Company and 500 box cars repaired by the Illinois Car Company.

Passenger Cars

THE CANADIAN NATIONAL has ordered two 30-passenger gasoline motor cars from Ledoux, Jennings, Ltd., Montreal.

THE FRANKFORD ELEVATED RAILWAY, Philadelphia, Pa., reported in the *Railway Age* of May 6 as asking for bids on 50 steel passenger cars, has ordered this equipment from the J. G. Brill Company.

THE ATLANTIC COAST LINE, reported in the *Railway Age* of May 6 as inquiring for 20 express cars and 10 coaches, has ordered this equipment from the Bethlehem Shipbuilding Corporation, Harlan Plant.

Track Specialties

THE MISSOURI PACIFIC is inquiring for 2,500 kegs of heat treated track bolts.

THE CHICAGO ROCK ISLAND & PACIFIC has placed an order with the Rail Joint Company for 10,000, 100 per cent joints.

THE MISSOURI, KANSAS & TEXAS is inquiring for 800,000 tie plates, 300,000 of which are for 66-lb. rails and 500,000 for 85 to 90-lb. rails.

Machinery and Tools

THE DETROIT UNITED RAILWAY has ordered a 36-in. lathe from the Niles-Bement-Pond Company.

THE SOUTHERN PACIFIC has ordered a 15-ton crane with 75 ft. span from the Niles-Bement-Pond Company.

THE ILLINOIS CENTRAL, in addition to its inquiry for 58 machines as reported in the *Railway Age* of June 3, is now inquiring for 17 lathes of various types, eight draw cut-shapers, eight grinders, three drill presses, three milling machines, two threading machines, two driving wheel presses, one bolt heading and forging machine, one radial drill and one combination punch and shear.

Miscellaneous

THE CHICAGO & NORTH WESTERN will receive bids until June 23 for 493 barrels of machine oils of various brands, 50,000 gallons of burning oil, approximately 200,000 gallons of kerosene and 63 cases of polar cup grease, all of which are to be supplied for a period ending December 31 of this year.

Signaling

THE DELAWARE, LACKAWANNA & WESTERN has placed an order with the Union Switch & Signal Company for automatic block signaling and electro pneumatic interlocking equipment required in connection with the East Orange elevation work now under construction between Newark, N. J., and Orange. On the three-track section the middle track will be signaled for movements in both directions. The Roseville avenue mechanical interlocking will be superseded by an electro-pneumatic plant of 31 levers. All main line signals are to be color-light.

THE CHICAGO UNION STATION's block and interlocking signals to be installed by the Union Switch & Signal Company, as reported in the *Railway Age* of May 20, page 1197, will include altogether 145 signals. All signals are to be of the position light type. The electro-pneumatic interlocking machine at the south approach will have a frame for 151 levers; 69 levers for 42 switches and 38 double slips with M. P. frogs, and 52 levers for 88 signals. At the north approach there will be a 95-lever frame; 41 levers for 39 switches and 15 double slips and 33 levers for 57 signals. The machines will have lever lights and illuminated track models of the spot-light type. Route locking is to be provided throughout, with sectional release, and stick locking for all signals. All track circuits will be alternating current. The signal company will also instal a complete train starting system.

Supply Trade News

A. L. Pearson, secretary of **Mudge & Co.**, Chicago, has been appointed assistant to the president in addition to his secretarial duties.

A. D. Halporn, who has been associated with the Philadelphia sales staff of the **Combustion Engineering Corporation**, New York, for some time, has now become a member of its New York sales force.

C. E. Meyer has been placed in charge of railway sales of the railroad department recently organized by the **Parish & Bingham Corporation**, Cleveland, Ohio. This new department



C. E. Meyer

has been formed for the purpose of manufacturing pressed steel car parts and other railway specialties. **P. O. Krehbiel**, a former engineer of the same corporation, has been appointed chief engineer of the railroad department. Mr. Meyer started in the railway supply business in 1911 with the **National Malleable Castings Company** at Cleveland. He left the employ of that company in February, 1913, to enter the stores department of the **Damascus Brake Beam Company**, Cleveland.

With the exception of eighteen months in the military service in this country and in France, he has been in the continuous service of the latter company in its purchasing, operating and sales departments until his recent appointment as above noted.

Harry B. Snyder, who recently returned from the foreign branch service of the **Baldwin Locomotive Works**, has been appointed assistant to the president of the **Pilliod Company**, 30 Church street, New York City.

The **United Alloy Steel Corporation**, Canton, Ohio, recently bought the **Canton Sheet Steel plant**. The plant will have a capacity of around 60,000 tons of ingots a month. This company's products now include common and alloy steel, blooms, slabs, billets, plates, bars, rods, sheets and anti-corrosive Toncan iron.

Frank Phalen, manager of sales of the New York district for the **Republic Iron & Steel Co.**, for the past 15 years, has resigned to associate himself with his brother **Charles G. Phalen** in the firm of **Phalen & Co.**, 342 Madison avenue, New York City. This firm handles railway equipment and specialties, also iron and steel products.

The **Firth-Sterling Steel Company**, McKeesport, Pa., has opened a branch office in Los Angeles, Cal., at 336 East Third street, under **E. S. Jackman & Co.**, who will look after all of this company's business west of Pittsburgh. **William Ely Nelson**, Pacific Coast representative, is in direct charge of the work. **Fred J. Kuhlman**, **L. W. Mead** and **C. D. Moore** will assist Mr. Nelson.

Ralph Templeton, for several years manager of the **Whitman & Barnes Manufacturing Company's** New York office and store, will on July 1 assume an important position in the company's executive offices in Akron, Ohio. Mr. Templeton entered the employ of the **Whitman & Barnes** organization in 1898 and has served it in various capacities continuously since that time. He was at first in the Akron office, then Detroit representative, and since 1910 manager of its New York store.

Joseph H. Perry, Jr., has been appointed Philadelphia representative of the **Edgewater Steel Company**, Pittsburgh, Pa. Mr. Perry will have his office in the Finance Building. He was for a number of years with the engineering department of the **Pennsylvania Railroad** at Pittsburgh. **M. Roy Jackson**, who was formerly vice-president in charge of the Philadelphia office, has resigned.

The **Pittsburgh Testing Laboratory**, Pittsburgh, Pa., has opened a sales office with a complete inspection bureau, at 1864 Railway Exchange building, St. Louis, Mo., and has appointed **Colonel N. C. Hoyles** as district manager. He is a graduate of **Queens University**, and took a post-graduate course at the **University of Toronto**. In 1908 he entered the service of this company as an inspector at its Birmingham office and in 1912 was promoted to manager of that office. Two years later he was transferred to the Vancouver office; and at the breaking out of the war, he entered the service of the **Canadian Army**, serving with the **British Pioneer Engineers Corps** in France. He received decorations from both the French and British governments, and upon his release from the Army in 1919, he was appointed assistant sales manager at Cleveland. Since that time he has been consecutively assistant sales manager at New York and manager at Cincinnati, until his appointment to the new position above mentioned.

W. B. Murray, chief engineer of the **Miller Train Control Corporation**, with headquarters at Danville, Ill., has been elected vice-president of that organization in addition to his present office.



W. B. Murray

Mr. Murray was born at Dunkirk, N. Y., on August 5, 1875. He entered railroad service in 1893 and was successively a fireman and engineer of the **Portland Mt. Tabor Railway**, Portland, Ore., until 1897. From that date until 1899 he was engaged in engineering studies at New Haven, Conn. In 1900 he entered the service of the **Hill & Miller Electrical Company**, Washington, D. C., as construction engineer. Two years later he became chief engineer of **Palais Royal** and in 1905 he

was general manager of the **Murray Engineering & Construction Company**, while from 1907 to 1911 he was a consulting engineer. He first became connected with the **Miller Train Control Corporation** in 1909, and since 1911 he has devoted his entire time to this organization.

Federal Trade Commission Opposes Steel Merger

The Federal Trade Commission has issued a formal complaint against the **Bethlehem Steel Corporation** and the **Lackawanna Steel Company** charging that the merger of the two companies will constitute an unfair method of competition in that it contains a dangerous tendency unduly to hinder competition and restrain commerce. The commission has reported to the Senate that the details of the plan are being carefully followed and so soon as the commission is in possession of sufficient information it will make a further report as to the proposed merger of other steel companies.

Obituary

I. B. Lesh, general superintendent of the **Railway Materials Company**, Chicago, with headquarters at Toledo, Ohio, died in that city on May 22.

Isaac Joseph, who was the founder of the **Edna Brass Manufacturing Company**, Cincinnati, Ohio, and its president for over 20 years, died on May 23.

Railway Construction

AMERICAN RAILWAY EXPRESS.—This company has called for bids for the construction of a brick building at Waukegan, Ill., to cost approximately \$12,000.

BALTIMORE & OHIO.—This company has awarded a contract to the Vang Construction Company, Cumberland, Md., for the construction of a girder bridge at Gary, Ind., to cost approximately \$50,000.

BOSTON & ALBANY.—This company is contemplating the rebuilding of 17 culverts along its line. The company has recently completed a first-aid building at its Allston, Mass., shops, an additional baggage room at Natick, Mass., and additional accommodations for express traffic at Brookline, Mass. Steel trusses to carry air hoists for steel coach work have been installed at the Allston shops and a gas pumping plant has been installed at Charlton, Mass. A new water line and a new steam line have been put in at West Springfield, Mass., and a new tie yard at the same point. A new rest room, locker room and machine shop have been built at North Adams Jct. and a new caller's office and caboose supply store at Rensselaer, N. Y. An additional well has been provided for locomotive water supply at Chatham, N. Y. A new house and pit for a heavy track scale are being installed at Beacon Park yard.

CANADIAN PACIFIC.—This company has awarded a contract to the John Hayman & Sons Company, London, Ont., for the construction of a new freight shed and office building at Windsor, Ont. The office portion of the building will be 40 ft. by 60 ft. and the freight shed portion 40 ft. by 304 ft. The building will rest on concrete foundations and a basement will be provided under the office structure. The trucking and office floors will be finished entirely with hard maple and the roof throughout will be of tar and gravel.

CANADIAN NATIONAL.—This company closed bids on May 31 for the construction of a cast-iron pipe line three miles long at Kindersley, Sask., and for the construction of a four-mile line revision on the Grand Trunk Pacific between Ansell, Alta., and Bickerdike; also for a four-mile connection between the Bashaw and Battle River subdivisions near Camrose, Alta., and for a two-mile connection between the Viking and Battle River subdivisions at Ryley, Alta.

CHESAPEAKE & OHIO.—This company is calling for bids for the construction of a five-stall brick addition to its roundhouse at Peru, Ind., to cost approximately \$30,000.

CHESAPEAKE & OHIO.—This company is calling for bids for the construction of terminal facilities at Peach Creek, W. Va., involving a five-stall engine house addition, a shop and store-room and a power house.

CHICAGO, BURLINGTON & QUINCY.—This company will partially replace this season its bridge over the Platte river near Oreapolis, Neb., with a steel and concrete structure to cost about \$400,000, the steel for which has been ordered from the American Bridge Company. The company has awarded a contract to B. J. Martin, Billings, Mont., for the construction of station extensions at Thermopolis, Wyo., as reported in the *Railway Age* for June 3.

CHICAGO UNION STATION.—This company, which was reported in the *Railway Age* of May 27 as calling for bids for the construction of the first section of the head house of its station along with other work, has awarded the contract for this work to the R. C. Wieboldt Construction Company, Chicago, and is calling for bids for the construction of the superstructure of the power plant.

COLORADO & SOUTHERN.—This company has obtained authority from the Interstate Commerce Commission and will undertake in the near future the construction of an extension of its Wichita Falls and Oklahoma line north from Byers, Tex., a distance of 13.3 miles, to Waurika, Okla., where a connection will be made with the Chicago, Rock Island & Pacific to provide a shorter

route for traffic into that section of the country tributary to Wichita Falls.

DELAWARE & HUDSON.—This company has awarded a contract to the Roberts & Schaefer Company, Chicago, for the construction of a 500-ton, two-pocket, four-track, automatic electric, reinforced concrete locomotive coaling station and sanding plant at South Junction, near Plattsburg, N. Y., this plant to provide overhead coal crushing facilities and to cost approximately \$50,000.

DELAWARE, LACKAWANNA & WESTERN.—This company has undertaken the elimination of a number of grade crossings on its Black Rock branch.

GREAT NORTHERN.—President Budd of this company is reported to have announced plans to electrify the company's lines in the Rocky mountains, the work probably not to begin until 1924.

GULF PORTS TERMINAL.—The Interstate Commerce Commission, which on August 18, 1921, denied this company's application for a certificate authorizing an extension in Baldwin and Mobile counties, Ala., has reopened the proceeding at the request of the Alabama Public Service Commission and has dismissed the case on the ground that no certificate is required. It appears that the construction of the proposed extension was begun several years ago and that by 1914 the clearing, grubbing and grading on 18 miles from the track end to the east side of Mobile Bay had been done and piles for trestles had been driven. Various delays were encountered which prevented the completion but, the report says, there is nothing to indicate that the construction of the extension was ever definitely abandoned.

ILLINOIS CENTRAL TERMINAL.—This company has awarded a contract to the Great Lakes Dredge & Dock Company, Chicago, for the construction of an earth filled bulkhead to extend 435 ft. into Lake Michigan from the present shore line opposite Twenty-third street and on the center line of the proposed South Park boulevard viaduct, to the property line acquired by its company from the city of Chicago pursuant to its electrification program, this bulkhead to involve the placing of about 100,000 yards of excavation from the lake bottom and to permit in conjunction with an extension to be made by the city the filling in of all submerged property acquired from the city.

ILLINOIS CENTRAL.—This company is asking for bids for the installation of a mechanical hump and track scale, including a scale house and foreman's house, at Centralia, Ill., the work to cost approximately \$30,000.

NASHVILLE, CHATANOOGA & ST. LOUIS.—This company, jointly with the Mobile & Ohio, is receiving bids for a brick and stucco passenger station at Union City, Tenn., to cost approximately \$20,000.

ST. LOUIS-SAN FRANCISCO.—This company has awarded a contract to the T. S. Leake Construction Company, Chicago, for the construction of a passenger station at Jennings, Okla., to cost approximately \$12,000.

YAZOO & MISSISSIPPI VALLEY.—This company is accepting bids for the raising of its freight house at Vicksburg, Miss., including some filling and the placing of concrete team pavements, the total work to cost approximately \$30,000.

THE BOSTON & ALBANY has completed the new subway at the station at Springfield, Mass., and it was put in service on June 5. The subway connects the two stations on the north and south sides of the tracks, and has stairways leading to the three passenger platforms used by the trains at this station. The subway is eight feet in height and ten feet in width, and is constructed as a solid timber box, which has been waterproofed to keep the water out, the water being taken care of by a complete system of drainage below, so that it should be dry at all times. The timber box is plastered on metal lath on the inside, with an air space behind the plaster. The new subway is reached by stairs from each of the three platforms. The stairs are easy—two short flights in each stairway, and are equipped with Alundum anti-slip treads. The walls and ceiling are of cement plaster and the floor is of asphalt. The subway is lighted by electricity. The tracks are carried over the subway on an independent steel structure, which takes the weight entirely off the subway. The subway was built by the New England Construction Company, Springfield.

Railway Financial News

ATLANTIC COAST LINE.—Asks Authority to Acquire Control.—This company has filed an application with the Interstate Commerce Commission which has been set for a hearing for authority to acquire the Rockingham Railroad, which extends from Gibson to Rockingham, N. C., by purchase of more than 50 per cent of its stock.

CENTRAL RAILROAD OF NEW JERSEY.—Annual Report.—The annual report issued this week shows the following corporate income account for the year ended December 31, 1921:

	1921	*1920
Operating revenues	\$52,660,998	\$45,151,049
Operating expenses	43,621,696	47,180,812
Net operating revenue	9,039,301	Def. 2,029,763
Non-operating income	21,652,817	7,421,490
Total income	30,692,118	5,391,727
Tax accruals	3,017,327	2,997,392
Rent for leased roads	2,329,646	1,962,685
Interest on funded debt	2,906,888	2,460,050
Net income	21,355,232	Def. 2,528,481
Dividends	3,841,152	2,743,680
Balance for the year	17,514,080	Def. 5,272,161

*Ten months ended Dec. 31.

CHESAPEAKE & OHIO.—Annual Report.—The income account for the year ended December 31, 1921, follows:

	1921	1920
Operating revenues:		
Freight	\$67,367,983	\$72,433,294
Passenger	11,739,627	11,814,187
Total operating revenues, including other ..	83,687,958	90,190,745
Operating expenses:		
Maintenance of way and structures	12,170,021	12,850,938
Maintenance of equipment	20,023,122	24,579,561
Traffic	800,618	690,362
Transportation	31,427,435	37,363,046
General	1,983,073	1,850,383
Total operating expenses, including other ..	66,603,077	77,744,521
Net operating revenue	17,084,881	12,446,224
Railway tax accruals	2,682,160	2,997,720
Railway operating income	14,382,012	9,446,264
Net railway operating income	13,660,926	11,158,326
Corporate net railway operating income	13,660,926	14,259,189
Gross income	14,781,677	16,160,773
Interest on debt	9,691,402	9,953,407
Total deductions from gross income	10,589,075	10,174,314
Net income	4,192,601	5,986,458

CHICAGO & NORTH WESTERN.—Asks Authority for Equipment Trust Certificates.—This company has applied to the Interstate Commerce Commission for authority to assume liability for \$5,250,000 of 15-year, 5½ per cent equipment trust certificates for the purchase of \$7,025,637 of equipment, including 1,250 box cars, 500 stock cars, 500 flat cars, 250 refrigerator cars, 250 gondolas, 300 Hart convertible cars, 20 freight locomotives, 10 passenger locomotives, and 20 switching locomotives. The company expects to invite bids for the certificates and to sell them at not less than 97½.

CHICAGO & WESTERN INDIANA.—New Director.—Franklin G. Robbins has been elected a director to succeed A. E. Wallace.

CHICAGO JUNCTION.—Commission Asked to Modify Order.—The trunk lines entering Chicago that protested against the acquisition by the New York Central of the Chicago Junction and the Chicago River & Indiana have filed a petition with the Interstate Commerce Commission asking for a modification of its recent order authorizing the acquisition, asking the commission to find specifically whether the order was issued under paragraphs 18 to 20 of Section 1, or under paragraph 2 of Section 5 of the Interstate Commerce Act. They also asked a finding as to whether the acquisition involves the consolidation of the carriers into a single system for ownership and operation and object because no certificate of convenience or necessity was included with the report.

CHICAGO UNION STATION.—Asks Authority to Issue Bonds.—This company has applied to the Interstate Commerce Commission for authority to issue and sell \$6,150,000 of first mortgage 5 per cent gold bonds guaranteed by the Chicago, Burlington & Quincy, Pittsburgh, Cincinnati, Chicago & St. Louis and Chicago, Milwaukee & St. Paul. These bonds have been sold subject to the commission's approval at 97.

ERIE.—Annual Report.—The corporate income statement for the year ended December 31, 1921, follows:

	1921	*1920
Operating revenues	\$113,539,098	\$49,066,924
Operating expenses	105,157,156	43,931,676
Net from railway operations	8,381,942	5,135,249
Railway tax accruals	3,738,449	1,204,268
Railway operating income	4,600,588	3,923,235
Net hire of equipment and joint facility rents ..	2,466,891	634,615
Net railway operating income	2,133,697	3,288,620
Total compensation, guaranty and net railway operating income	14,682,032	4,704,919
Total non-operating income	16,815,729	18,516,983
Gross income	14,121,304	14,078,397
Deductions from gross income	2,694,425	4,438,586
Net income	1,099,171	976,015
Applied to sinking funds	1,595,254	3,462,570
Surplus		

*Operating results, Sept. 1 to Dec. 31.

ERIE.—Asks Authority for Equipment Trust Certificates.—This company has applied to the Interstate Commerce Commission for authority to guarantee an issue of \$4,500,000 of 15-year 5½ per cent equipment trust certificates for the reconstruction of 5,000 box cars, in accordance with an agreement with E. T. Stotesbury and the Commercial Trust Company of Philadelphia.

FLORIDA EAST COAST.—Annual Report.—The annual report issued this week shows the following income account for the year ended December 31, 1921:

	1921	1920
Operating revenues:		
Freight	\$7,828,835	\$7,825,592
Passenger	4,010,329	4,021,376
Total operating revenues, including other ..	13,579,109	13,701,191
Operating expenses:		
Maintenance of way and structures	3,002,692	2,151,915
Maintenance of equipment	2,518,669	2,499,196
Traffic	156,683	122,273
Transportation	5,112,881	5,467,248
General	335,891	337,097
Total railway operating expenses	11,218,635	10,749,369
Net from railway operations	2,360,474	2,951,822
Railway tax accruals	805,448	597,897
Railway operating income	1,555,374	2,330,236
Total non-operating income	442,789	1,161,822
Gross income	1,998,163	3,492,058
Interest on funded debt	583,833	592,333
Total deductions from gross income	1,231,459	1,281,062
Net income	766,705	2,210,996
Income balance transferred to profit and loss ..	766,705	2,210,996
Less federal profit and loss for 1920		823,287
Net profit and loss—corporate	766,704	1,387,708

ILLINOIS CENTRAL.—Authorized to Issue Common Stock.—The Interstate Commerce Commission has authorized an issue of \$10,929,600 of common stock in conversion of a like amount of preferred stock, the issue of which was authorized by the commission's order of May 23. The preferred stock will contain a provision entitling the holder to convert it at his option into common stock after September 1 on the basis of share for share.

INTERNATIONAL & GREAT NORTHERN.—Operating Study.—See article on another page of this issue entitled "Reorganized I. & G. N. Will Need Much Equipment."

LONG ISLAND.—Authorized to Issue Equipment Trust Certificates.—The Interstate Commerce Commission has authorized this company to assume obligation and liability in respect of \$980,000 of equipment trust certificates in connection with the procurement of 50 passenger cars.

MINNEAPOLIS, ST. PAUL & SAULT STE. MARIE.—Six Months' Guaranty Certified.—The Interstate Commerce Commission has certified the amount of this company's guaranty for the six months' period of 1920 as \$5,127,467, of which \$592,467 was still to be paid.

MISSOURI & NORTH ARKANSAS.—Operation Resumed.—See article on another page of this issue.

MOBILE & OHIO.—Authorized to Issue Equipment Notes.—The Interstate Commerce Commission has authorized an issue of \$366,000 of equipment notes in connection with the procurement of 10 Mikado locomotives.

NEW ORLEANS, TEXAS & MEXICO.—Asks Authority to Acquire Stock.—This company has applied to the Interstate Commerce Commission for approval of a contract to purchase from P. S. Sterling the stock of the Dayton-Goose Creek Railway for \$750,000 and \$250,000 of N. O. T. & M. 5 per cent income bonds.

NEW YORK CENTRAL.—Asks Authority to Issue Bonds.—This company has applied to the Interstate Commerce Commission for

authority to issue \$25,000,000 of refunding and improvement mortgage 5 per cent bonds, series C, to be redeemable by October 1, 1951, at 105, the proceeds to be used to retire a like amount of 10-year, 7 per cent collateral trust gold bonds dated September 1, 1920, thereby reducing the interest charge. It is desired to call the 7 per cent bonds at 105 on September 1. The company is in negotiation with J. P. Morgan & Co., for the sale of the bonds and unless the market changes expects to sell them to net not less than 90.

READING COMPANY.—New Directors.—Samuel M. Curwen, president of the J. G. Brill Company, William A. Law, president of the Pennsylvania Mutual Life Insurance Company, and Ira A. Place, a vice-president of the New York Central, have been elected directors. They succeed Hugh L. Bond, Jr., and Henry Pratt McKean, deceased, and Albert H. Harris, resigned.

Modification of Dissolution Decree Ordered.—See *Railway Age*, June 3, 1922, page 1306.

An order has been entered by Judges Buffington and Thompson of the United States District Court at Philadelphia permitting the Continental Insurance Company and the Fidelity-Phoenix Fire Insurance Company of New York to withdraw their petitions filed December 9, 1921, to set aside the sale by the Central Railroad of New Jersey of the Lehigh & Wilkes-Barre Coal Company stock to the Reynolds syndicate, under the Reading dissolution plan. The insurance companies had asked leave to withdraw in a motion they filed February 28, 1922. The decree also provides that the Central of New Jersey and representatives of the Reynolds syndicate be given ten days in which to file answer to the Starr petition.

TENNESSEE, ALABAMA & GEORGIA RAILWAY.—Asks Authority to Issue Securities.—This company, which has been organized to take over the property of the Tennessee, Alabama & Georgia Railroad, has applied to the Interstate Commerce Commission for authority to issue \$400,000 of common stock and \$400,000 of preferred stock.

TOLEDO, ST. LOUIS & WESTERN.—Annual Report.—The income account for the year ended December 31, 1921, follows:

	1921	1920
Average miles of road operated	454	454
Operating revenues:		
Freight	\$8,737,449	\$10,766,900
Passenger	365,358	461,017
Total, including other	9,503,970	11,758,721
Operating expenses:		
Maintenance of way and structures	1,531,323	2,317,092
Maintenance of equipment	1,966,428	2,371,601
Traffic	243,932	178,056
Transportation	3,383,736	4,425,344
General	194,390	201,312
Total operating expenses	7,319,062	9,492,917
Net revenue from railway operations	2,184,908	2,265,804
Railway tax accruals	438,369	350,150
Railway operating income	1,746,432	1,915,192
Total non-operating income	490,647	2,261,091
Gross income	2,237,079	4,176,283
Interest on funded debt	697,679	*1,146,228
Total deductions from gross income	1,093,088	3,814,807
Net income	1,143,991	361,476
Income applied to other reserve funds	700	.....
Income balance transferred to credit of profit and loss	1,143,290	361,476

*Includes interest on A. & B. gold bonds of 1917, amounting to \$461,080 defaulted.

TOLEDO TERMINAL.—Asks Authority to Issue Bonds.—This company has applied to the Interstate Commerce Commission for authority to issue and sell to its proprietary lines \$321,000 of 4½ per cent first mortgage gold bonds at 91.78.

VIRGINIA & WESTERN.—Asks Authority to Issue Bonds.—This company has applied to the Interstate Commerce Commission for authority to issue \$1,500,000 of first mortgage 5 per cent 50-year gold bonds guaranteed by the Virginian, the proceeds to be used to pay for the construction of a line now practically completed from Virwest to Glen Rogers, W. Va., 14.45 miles, now being operated by the Virginian.

Treasury Payments to Railroads

Since last announcement, dated May 1, 1922, payments under Sections 204, 209, 210 and 212 of the Transportation Act of 1920, as amended, have been made by the Treasury as follows:

(Continued on page 1367)

Annual Report

Thirty-eighth Annual Report of the Southern Pacific Company and Proprietary Companies for the Year Ended December 31, 1921

SOUTHERN PACIFIC COMPANY

REPORT OF THE BOARD OF DIRECTORS

NEW YORK, N. Y., June 1, 1922.

TO THE STOCKHOLDERS OF THE SOUTHERN PACIFIC COMPANY:
Your Board of Directors submits this report of the operations and affairs of the Southern Pacific Company and of its Proprietary Companies for the fiscal year ended December 31, 1921.

TRANSPORTATION OPERATIONS

As stated in last year's report, your properties were operated by the Director General of Railroads during the first two months of 1920, and by your Company during the last ten months of that year. In the following table, however, which shows the net railway operating income for the year 1921 compared with that for the year 1920, the 1920 figures include the results from operation for the entire year, regardless of the change in control:

	Year Ended December 31, 1921	Year Ended December 31, 1920	+ Increase — Decrease	Per Cent
1. Average miles of road operated...	11,187.99	11,151.60	+	36.39
RAILWAY OPERATING REVENUES				
2. Freight	\$181,409,691.87	\$183,416,522.60	— \$2,006,830.73	1.09
3. Passenger	63,442,251.17	71,701,637.26	— 8,259,386.09	11.52
4. Mail and express	11,935,604.42	13,660,156.92	— 1,724,552.50	12.62
5. All other transportation	5,638,563.36	5,074,092.84	+	564,470.52
6. Incidental	6,958,343.55	8,342,712.13	— 1,384,368.58	16.59
7. Joint facility—Credit	166,168.78	105,349.51	+	60,819.27
8. Joint facility—Debit	56,257.82	30,967.01	—	25,290.81
9. Total railway operating revenues	\$269,494,365.33	\$282,269,504.25	— \$12,775,138.92	4.53
RAILWAY OPERATING EXPENSES				
10. Maintenance of way and structures	\$42,198,882.59	\$48,465,465.26	— \$6,266,582.67	12.93
11. Maintenance of equipment	49,188,143.35	59,548,392.36	— 10,360,249.01	17.40

12. Total maintenance	\$91,387,025.94	\$108,013,857.62	— \$16,626,831.68	15.39
13. Traffic	4,182,340.14	3,490,706.53	+	691,633.61
14. Transportation	104,744,036.41	117,227,797.91	— 12,483,761.50	10.65
15. Miscellaneous operations	4,153,650.67	5,609,062.74	— 1,455,412.07	25.95
16. General	8,521,539.30	8,112,651.83	+	408,887.47
17. Transportation for investment—Credit	416,329.67	340,286.57	—	76,043.10
18. Total railway operating expenses	\$212,372,262.79	\$242,113,790.06	— \$29,541,527.27	12.20
19. Net revenue from railway operations	\$56,922,102.54	\$40,155,714.19	+	\$16,766,388.35
20. Railway tax accruals	\$15,539,469.20	\$14,792,063.67	+	\$747,405.53
21. Uncollectible railway revenues	124,565.69	112,945.09	+	11,620.60
22. Railway operating income	\$41,258,067.65	\$25,250,705.43	+	\$16,007,362.22
23. Equipment rents—Net	5,154,543.91	4,496,775.66	+	657,768.25
24. Joint facility rents—Net	156,732.60	*558,414.27	+	715,146.87
25. Net railway operating income	\$35,946,791.14	\$21,312,344.04	+	\$14,634,447.10

*Credit.

The figures for the year 1921, shown in the foregoing table, do not represent the actual results from operations during the year, because the accounts, as stated, include estimates of unaudited items, such as loss and damage claims and reparation claims, appertaining to operations during the guaranty period (March to August, 1920, inclusive). In the case of many of these claims the Company's liability cannot be definitely determined in advance of final decision by State Commissions, by the Interstate Commerce Commission, or by the courts. They are included in the current accounts, because the Interstate Commerce Commission decided on December 15, 1921, that the operating income accounts for the guaranty period should be closed as of December 31, 1921, and that no item would be considered in connection with the Company's claim under the guaranty provision of the Transportation Act of 1920 unless taken into the accounts as of that date upon an

actual or an estimated basis. If these guaranty period items were eliminated from the accounts, the net railway operating income for the year ended December 31, 1921, would amount to \$39,827,756.48. It should be understood, however, that, although these guaranty period items reduce the *Net Railway Operating Income*, they do not affect the *Net Income* for the year (line No. 55 of the income statement), because they result in a corresponding increase in our claim against the Government on account of the guaranty, which is included in the account Miscellaneous Income appearing on line No. 41 of the income statement.

The following summarizes results of transportation operations for 1921 compared with 1920, also compared with the Federal control years, 1918 and 1919, and with 1917:

	1921	1920	1919	1918	1917
Operating revenues	\$269,494,365	\$282,269,504	\$239,657,272	\$221,611,206	\$193,971,490
Relative to 1917 (100).....	139	146	124	114	100
Operating expenses	212,572,262	242,113,790	188,385,172	162,722,372	120,601,823
Relative to 1917 (100).....	176	201	156	135	100
Net revenue from railway operations.....	56,922,103	40,155,714	51,272,100	58,888,834	73,369,667
Relative to 1917 (100).....	78	55	70	80	100
Operating ratio, per cent.....	78.88	85.77	78.61	73.43	62.18
Traffic units (ton miles plus 3 times passenger miles), thousands.....	17,451,417	22,010,458	20,198,015	20,836,033	20,876,908
Relative to 1917 (100).....	84	105	97	100	100

Operating revenues were seriously affected by the nation-wide business depression that began about the close of 1920 and continued throughout the year 1921, aggravated on your company's lines by diversion of transcontinental business, by much lower rates offered by the Panama Canal route, and by the competition on the highways of motor trucks substantially free from taxation and regulation. The traffic units handled show a decrease of 20.71 per cent. from the peak of 1920, and although advanced freight and passenger rates made effective August, 1920, were enjoyed during the entire year, operating revenues decreased 4.53 per cent. Average wages paid throughout 1921 were slightly higher than in 1920, as the wage increase dating from May 1, 1920, was effective during eight months of that year and six months of 1921, while during the remaining six months of 1921 wages were higher than during the first four months of 1920. Prices of fuel and other material in 1921 also averaged more than in 1920. The combined effect of these higher wages and higher material prices increased 1921 operating expenses by \$5,292,000. Notwithstanding these adverse conditions, operating expenses were reduced 12.20 per cent. and net revenue from railway operations increased 41.75 per cent. This net result reflects the improvement forecast in last year's report as progress is made in substituting the incentive of self interest of private management, and the increased efficiency and more cheerful service of the entire operating staff, for the apathy and blight of Government management.

After the return of the roads and the passage of the Transportation Act, your company joined other railways in applying to the United States Railroad Labor Board to readjust wages to meet changes in living costs, and to equalize wages paid by others for skilled and unskilled labor for like work in the territory in which your lines are operated. Modification was also requested of the unjust and onerous working rules of National Agreements made by the Director General near the close of Federal control, whereby unearned wages and excessive amounts for overtime were paid. These applications have been granted in part, but a great many onerous conditions remain which increase expenses compared with those previous to Federal control, and which the carriers are seeking to remedy. Effective July 1, 1921, the Labor Board rendered a decision which lowered wages about 12 per cent., reducing by more than half the increase of 22 per cent. granted May 1, 1920. According to a statement recently issued by the Labor Board, railway wages are still nearly 60 per cent. higher than they were in December, 1917, when the roads were taken over by the Government. Whether justified or not, this higher scale profoundly affects expenses compared with the cost of operation previous to Federal control. The following table shows the average monthly wages earned by specified classes of employees on Southern Pacific lines under the new scale in the last half of 1921, compared with the same period of 1920 when higher wages were effective, and compared with wages earned in the year 1916, the year preceding the passage of the Adamson Act, which increased wages by shortening the measure of a day's work for train service employees:

AVERAGE MONTHLY WAGES EARNED BY REPRESENTATIVE CLASSES OF EMPLOYEES
6 MONTHS ENDING

	DECEMBER 31		YEAR 1916	RELATIVE		
	1921	1920		1921	1920	1916
Engineers	\$261.77	\$316.77	\$182.19	144	174	100
Conductors	234.66	262.33	149.54	157	175	100
Firemen	194.15	231.46	110.25	176	210	100
Other trainmen	188.35	219.50	107.30	176	205	100
Machinists	161.81	204.06	105.62	153	193	100
Carpenters	139.23	175.63	79.41	175	221	100
Clerks	136.69	151.13	84.87	161	178	100
Employees, floating equipment.....	110.64	120.10	71.51	155	168	100
Station service employees.....	97.53	124.51	71.34	137	175	100
Sectionmen	71.08	96.43	40.17	177	240	100
All other employees.....	131.22	163.60	82.97	158	197	100
Total employees	\$130.57	\$154.85	\$79.45	164	195	100

The decrease of \$12,775,138.92, equivalent to 4.53 per cent., in operating revenues, in the face of increased freight and passenger rates which became effective during the latter part of preceding year, is principally attributable to the great shrinkage of traffic, which has resulted from a severe depression of business, and which is reflected in a decrease of nearly 11 per cent. in the aggregate operating revenues of the principal railroads of the country.

Revenue from passenger business was further diminished by a dearth of large conventions such as were held on the Pacific Coast during the preceding year, and by a substantial increase in travel by automobile. Much money is being appropriated by the Federal and State governments for the construction of highways that usually parallel the very railroads which are heavily taxed to provide and maintain them.

Decrease in revenue from mail is due to a large payment by the Government for previous years, included in the year 1920, with which comparison is made.

Freight revenue has been adversely affected by the smallest cotton crop in Texas and Louisiana that has been produced in twenty years; by a large reduction in the acreage of rice planted in the same states; and by reductions of rates on such important commodities as beans, canned goods, dried fruit, livestock, lumber, apples, cantaloupes, and vegetables. Some of these reductions were made in deference to public sentiment, and in response to the producers' plea that they required such assistance to market their products. Other reductions were made to restore market relationships that had been disturbed by previous horizontal increase, and again other reduc-

tions were made to stem the tide of wholesale diversion of transcontinental traffic to the steamship lines operating through the Panama Canal. In 1921, the number of steamship voyages through the Panama Canal between Atlantic and Pacific ports of the United States increased 80 per cent., and the volume of freight increased 83 per cent., over the preceding year. Freight shipped by direct sailings between the Pacific Coast and Europe and by direct sailings between Atlantic ports and trans-Pacific ports, much of which was formerly handled by transcontinental railroads, is not included in these increases. The steamship lines operating through the Panama Canal enjoy conspicuous advantages, because their rates, which are not subject to regulation by the Interstate Commerce Commission, may be freely

changed from day to day. If these vessels are exempted from the payment of tolls, as pending legislation contemplates, their advantage will be increased at the expense of the taxpayers of the entire country. This competition is supplemented by barge lines operated by the Government on the Mississippi and Warrior rivers, which carry freight at reduced rates between interior points and Gulf ports in connection with the Canal steamship lines. The railroads have not made much progress towards meeting the water competition for transcontinental freight, because of the unfair handicap to which they are subjected. To make rates to or from Pacific Coast ports to secure a share of the traffic fostered by the railroads, for which the Canal steamship lines now compete, the railroads are required by the long and short haul provision of the Interstate Commerce Law to reduce rates to the same bases as maxima at all intermediate points (where they are not necessary to meet the water competition), unless relief from that requirement is granted by the Interstate Commerce Commission, and even if such relief should be eventually granted, the railroads are subjected to the loss of the coast traffic during the many months consumed in hearings, argument, consideration, and decision. Applications made in June and August, 1921, have not yet been decided after nearly a year's delay.

Maintenance of way and structures decreased \$6,266,582.67, or 12.93 per cent. Although the labor cost of maintenance was substantially reduced, the properties were satisfactorily maintained during the year. This is evidenced by the following table showing materials used in repairs and renewals in 1921 compared with 1920, and compared also with the Federal control years 1919 and 1918, when there was deficient maintenance on a part of your lines.

MATERIAL USED IN REPAIRS AND RENEWALS

	1921	1920	1919	1918
New steel rail, miles....	427.43	527.76	474.73	408.44
Ties, number	4,721,542	4,887,913	4,173,774	3,889,768
Tie-plates, number	4,112,875	3,316,915	3,672,221	1,910,311
Piling, lineal feet.....	847,817	737,731	94,455	75,476
Lumber, feet b.m.....	23,557,715	23,710,582	15,402,035	6,354,663

Maintenance of equipment decreased \$10,360,249.01, or 17.40 per cent., locomotive mileage decreased 9.73 per cent. and total car mileage decreased 6.78 per cent. In the annual report for 1920 reference was made to the fact that at the close of Federal control 87.5 per cent. of the company's box cars were on other railways. The deplorable condition of this equipment owing to the neglect of current repairs when away from home during Federal control, was not realized until we regained possession of our cars in the fall of 1921. The following table shows the condition of freight equipment at the beginning and at the end of Federal control; on September 1, 1921; by which time most of our cars had been returned; at the close of 1921; and at May 1, 1922:

	May 1, 1922	Dec. 31, 1921	Sept. 1, 1921	Mar. 1, 1920	Dec. 31, 1917
All freight cars on line (including foreign and private).....	62,545	67,463	66,411	69,335	63,702
All freight cars in shops or awaiting repairs	5,069	6,158	8,341	2,996	2,260
Per cent. of all freight cars in shops or awaiting repairs, to all cars on line.....	8.10%	9.13%	12.56%	4.32%	3.55%

Traffic expenses increased \$691,633.61, or 19.81 per cent., due to restoration of traffic agencies and increased activity to regain traffic diverted during Federal control, the increased expenditures being effective for twelve months in 1921 and ten months in 1920.

Transportation expenses decreased \$12,483,761.50, or 10.65 per cent. Train mileage decreased 7.63 per cent., but there was an increase of 6.8 per cent. in the average price of fuel. The consumption of fuel per thousand ton miles (oil equated to coal on basis of four barrels of oil to one ton of coal) showed a decrease both in passenger service and in freight service, the combined saving through greater fuel efficiency compared with previous year, amounting to \$1,458,661. The improvement in use has been constant from year to year. In 1921 it brought about a saving of \$7,973,903 in the operating expenses of that year compared with 1913. The average car load decreased 4.55 per cent., largely due to an increase in the movement of products in refrigerator cars, where the car load is light, and to a decrease in movement of low grade heavy commodities. For this reason, and because of a decrease in the ratio of loaded to total freight cars, due to inability to fully load cars on account of the heavy fall in business, and the relocation of cars to owning lines after their dispersion, due to common use during Federal control, the tons of freight per train decreased 7.83 per cent., but the gross tons per train increased 1.36 per cent.

Miscellaneous operations decreased \$1,455,412.07, or 25.95 per cent., following decreased Incidental Revenues.

General expenses increased \$408,887.47, or 5.04 per cent., due to increased charges for Federal valuation work, increased accounting requirements, and allowances for pensions.

The increase in taxes for 1921 over 1920 is \$747,405.53. This increase is the result of an increase of \$1,893,052.10 in state and county taxes, due, principally, to an increase in the rate of taxation on gross earnings in California from 3 1/2 per cent. to 7 per cent. under the King Tax Law which became effective July 1, 1921; to an increase of \$170,606.93 in capital stock tax; and to a decrease of \$1,316,253.50 in Federal income and excess profits taxes, due, principally, to an assessment in 1920 of excess profits tax for the year 1917. As this report goes to press the large increase in taxes of \$747,405.53, or 5.05 per cent., over 1920 seems trivial in com-

parison with the taxes for the first four months of 1922, which amount to \$6,393,726.28, an increase of 38.26 per cent. over 1921. At this rate taxes for the year 1922 will aggregate \$19,181,178.84, or 93 per cent. of the dividends distributed to stockholders for 1921. Taxes amounted to \$8.60 for every hundred dollars of freight revenue during the year 1921, and to \$12.42 for every hundred dollars of freight revenue during the first four months of 1922.

The total Railway Tax Accruals for the year consumed \$15,539,469.20, or 27.3 per cent., of the \$56,922,102.54 of Net Revenue from Railway Operations. With an increase of 138.76 per cent. in the miles of road operated over the miles operated in 1885, the first year of operation, taxes have increased \$14,679,964.14, or 1,707.96 per cent.

The heavy passenger travel in motor vehicles has introduced an element of great danger at railway grade crossings, as shown in the following state-

ment giving the casualties to persons in automobiles at crossings on your company's steam lines:

	1921	1920
Number of persons killed.....	76	57
Number of persons injured.....	360	293

Several states now require motors to stop before attempting to cross railroad tracks.

It is gratifying to observe the rapid recovery from the conditions that prevailed during Federal control towards normal conditions of safety in the operation of your property in 1921, the first complete year of operation after Government control. In the three years of the test period ending in 1917, one fatality to employes in train accidents occurred to every 8,333,333 locomotive miles run; in the years of Federal control, to wit, 1918 and 1919, the fatalities were one to every 6,250,000 and 2,000,000 locomotive miles run

INCOME ACCOUNT

SOUTHERN PACIFIC COMPANY AND PROPRIETARY COMPANIES, COMBINED

(Excluding offsetting accounts)

	Year Ended December 31, 1921	Year Ended December 31, 1920	+Increase -Decrease	Per Cent
OPERATING INCOME				
1. Railway Operating Revenues:				
2. Freight	\$181,409,691.87	\$157,220,043.42	+ \$24,189,648.45	15.39
3. Passenger	63,442,251.17	61,607,126.86	+ 1,835,124.31	2.98
4. Mail	3,617,146.23	3,764,550.44	- 147,404.21	3.92
5. Express	8,318,458.19	6,054,466.52	+ 2,263,991.67	37.39
6. All other transportation.....	5,638,563.36	4,639,538.20	+ 999,025.16	21.53
7. Incidental	6,958,343.55	7,038,752.12	- 80,408.57	1.14
8. Joint facility—Credit	166,168.78	81,889.56	+ 84,279.22	102.92
9. Joint facility—Debit	56,257.82	24,874.94	- 31,382.88	126.16
10. Total railway operating revenues.....	\$269,494,365.33	\$240,381,492.18	+ \$29,112,873.15	12.11
11. Railway Operating Expenses:				
12. Maintenance of way and structures.....	\$42,198,382.59	\$41,938,579.91	+ \$260,302.68	.62
13. Maintenance of equipment.....	49,188,143.35	49,921,811.29	- 733,667.94	1.47
14. Total maintenance	\$91,387,025.94	\$91,860,391.20	- \$473,365.26	.52
15. Traffic	4,182,340.14	3,097,893.12	+ 1,084,447.02	35.01
16. Transportation	104,744,036.41	100,486,655.12	+ 4,257,381.29	4.24
17. Miscellaneous operations	4,153,650.67	4,830,833.96	- 677,183.29	14.02
18. General	8,521,539.30	7,247,152.52	+ 1,274,386.78	17.58
19. Transportation for investment—Credit.....	416,329.67	336,066.68	- 80,262.99	23.88
20. Total railway operating expenses.....	\$212,572,262.79	\$207,186,859.24	+ \$5,385,403.55	2.60
21. Net revenue from railway operations.....	\$56,922,102.54	\$33,194,632.94	+ \$23,727,469.60	71.48
22. Railway tax accruals.....	15,539,469.20	13,006,696.07	+ 2,532,773.13	19.47
23. Uncollectible railway revenues.....	124,565.69	95,346.40	+ 29,219.29	30.65
24. Equipment rents—Net	5,154,543.91	4,060,345.12	+ 1,094,198.79	26.95
25. Joint facility rents—Net	156,732.60	149,695.98	+ 7,036.62	131.81
26. Net railway operating income.....	\$35,946,791.14	\$16,524,941.33	+ \$19,421,849.81	117.53
27. Revenues from miscellaneous operations.....	.....	\$2,581,763.93	- \$2,581,763.93	.....
28. Expenses of miscellaneous operations.....	.....	1,342,255.38	- 1,342,255.38	.....
29. Net revenues from miscellaneous operations.....	.....	\$1,239,508.55	- \$1,239,508.55	.....
30. Taxes on miscellaneous operating property.....	.....	46,346.16	- 46,346.16	.....
31. Miscellaneous operating income.....	.....	\$1,193,162.39	- \$1,193,162.39	.....
32. Total nonoperating income.....	\$19,350,585.81	\$39,892,611.94	- \$20,542,026.13	51.49
33. Gross income	\$55,297,376.95	\$57,610,715.66	- \$2,313,338.71	4.02
DEDUCTIONS FROM GROSS INCOME				
34. Rent from leased roads.....	\$204,436.26	\$226,277.70	- \$21,841.44	9.65
35. Miscellaneous rents	639,525.64	600,925.75	+ 38,599.89	6.42
36. Miscellaneous tax accruals.....	680,009.91	838,367.78	- 158,357.87	18.89
37. Interest on funded debt—Bonds and notes.....	20,404,924.12	22,533,488.13	- 2,128,564.01	9.45
38. Interest on funded debt—Non-negotiable debt to affiliated companies.....	2,675,222.71	136,478.00	+ 2,538,744.71	.....
39. Interest on unfunded debt.....	159,432.30	51,303.51	+ 108,128.79	210.76
40. Amortization of discount on funded debt.....	100,490.96	169,228.14	- 68,737.18	40.62
41. Maintenance of investment organization.....	25,368.30	24,789.93	+ 578.37	2.33
42. Miscellaneous income charges.....	389,189.10	959,582.09	- 570,392.99	59.44
43. Total deductions from gross income.....	\$24,678,599.30	\$25,540,441.03	- \$861,841.73	3.37
44. Net income	\$30,618,777.65	\$32,070,274.63	- \$1,451,496.98	4.53
DISPOSITION OF NET INCOME				
45. Income applied to sinking and other reserve funds.....	\$1,081,559.39	\$1,053,945.19	+ \$27,614.20	2.62
46. Income appropriated for investment in physical property.....	22,000.00	.....	+ 22,000.00	.....
47. Total appropriations	\$1,103,559.39	\$1,053,945.19	+ \$49,614.20	4.71
48. Income balance transferred to credit of profit and loss.....	\$29,515,218.26	\$31,016,329.44	- \$1,501,111.18	4.84
49. Per cent. of net income on average amount of outstanding capital stock of Southern Pacific Company:				
50. (a) Railroad income	6.12	7.53	- 1.41	18.73
51. (b) Other income	2.81	3.04	- .23	7.57
52. (c) Total	8.93	10.57	- 1.64	15.52

*Debit. †Credit. ‡In arriving at the figures for per cent. of railroad income and per cent. of other income on outstanding capital stock, an estimated apportionment of net income was made by allocating, as nearly as possible, the items relating solely to that class, the remaining items being apportioned between the two classes on an estimated basis.

respectively; in 1921 they were one to every 14,333,333 locomotive miles run. Not a passenger was killed in a train accident in the three test years, but under Government control the number killed was one to every 3,703,000 locomotive miles run in 1918, and 1 to every 10,000,000 locomotive miles run in 1919. In 1921 the number was only 1 to every 50,000,000 locomotive miles run.

The extent to which maintenance of way and equipment was neglected on the lines in Louisiana and Texas during Federal control is shown thus:

During the three years of the test period the number of derailments caused principally by defective track and equipment was 1 to every 280,000 locomotive miles run; during 1918 and 1919, under Federal control, it was 1 to every 150,000 and 96,000 locomotive miles run respectively; in 1921, the first entire year of private operation, it fell to 1 to every 205,000 locomotive miles run.

The attention of the Federal Railroad Administration was directed to the neglect of maintenance and the unsafe condition of these lines by your corporate officers and by the Louisiana Railroad Commission, but without substantial remedy.

OPERATING INCOME

As stated in last year's report, your properties, during the months of January and February, 1920, were operated by the U. S. Railroad Administration under the Federal Control Act, and for that period your Company received the standard return rental as fixed in the agreement with the Director General of Railroads. During the ten months, March 1 to December 31, 1920, your properties were operated by your Company, and the amounts reported in the column headed "Year Ended December 31, 1920" (lines 1 to 24), represent the operating results for those ten months. The operating results for the entire year 1920, regardless of the change in control, compared with the operating results for the year 1921, are shown in the table appearing at the beginning of the report.

The \$1,193,162.39, shown in the 1920 column as Miscellaneous Operating Income (line No. 29) represents the operating income for January and February, 1920, of the Fuel Oil Department which was sold to the Southern Pacific Land Company on February 29, 1920.

NONOPERATING INCOME

The item of \$8,043,288.03, shown in the 1920 column as Income from Lease of Road—Standard Return (line No. 31), represents the proportion for January and February, 1920, of the standard return rental as fixed in the agreement with the Director General of Railroads. The item of \$852,740.80, shown in the 1921 column (line No. 31), is made up of \$1,859,646.63, representing the approximate amount of additional compensation for the use of additions and betterments, new equipment, and road extensions completed during the period of Federal control, less \$1,006,905.83, representing the net deduction from the standard return rental (as fixed in the agreement with the Director General of Railroads and taken into account by the Company during the period of Federal control) resulting from changes and corrections made by the Interstate Commerce Commission in the accounts for the test period which were used as the basis of the standard return.

The increase of \$343,634.45 in Miscellaneous Rent Income (line No. 33) is due, principally, to the rental received this year, from Associated Oil Company and from Pacific Oil Company, for the use of oil pipe line formerly used by the Fuel Oil Department.

The increase of \$594,617.04 in Income from Unfunded Securities and Accounts (line No. 39) represents interest on U. S. Government Certificates of Indebtedness, bank acceptances, and increased bank deposits, resulting from the sale of the California Oil Properties mentioned in last year's report.

The item of \$20,490,427.50, shown in the 1920 column as Miscellaneous Income—U. S. Government Guaranty (line No. 41) represents the estimated amount due from the Government, under its guaranty, for the six months ended August 31, 1920, such estimate having been based on figures available at December 31, 1920, as explained on page 8 of last year's report. The item \$3,648,602.47 shown in the 1921 column (line No. 41) is made up of \$3,880,965.34, representing estimates of unaudited items taken into account this year for the reasons stated in the first paragraph on page 7, less \$232,362.87, representing an adjustment in the amount of the Government guaranty as booked to December 31, 1920, due to the adjustment made by the Interstate Commerce Commission in the amount of the standard return rental, as explained in the third paragraph above.

The decrease in Other Miscellaneous Income (line No. 42) is the result, principally, of charges made during the year by the U. S. Railroad Administration representing adjustments on account of revenues prior to January 1, 1918, credited to the Company during the period of Federal control.

DEDUCTIONS FROM GROSS INCOME

The decrease of \$2,128,564.01 in Interest on Funded Debt—Bonds and Notes (line No. 48), is made up of a decrease of \$2,024,614.79 resulting from the conversion of Southern Pacific Company Four and Five Per Cent Twenty-Year Convertible bonds into capital stock; a decrease of \$278,912.15 resulting from the retirement of bonds and equipment trust certificates maturing during the year; a decrease of \$35,753.78 resulting from the retirement of bonds through sinking funds; a decrease of \$294,894.17 resulting from the acquisition of bonds by Southern Pacific Company and Proprietary Companies; and an increase of \$504,583.33, resulting from a full year's interest, this year, on Southern Pacific Equipment Trust Certificates, Series E, issued as of June 1, 1920.

The increase of \$1,938,744.71 in Interest on Funded Debt—Nonnegotiable Debt to Affiliated Companies (line No. 49) represents, principally, interest on deposits with Southern Pacific Company made by Southern Pacific Land Company, resulting from the sale of oil properties by the latter company to the Pacific Oil Company.

The increase of \$108,128.79 in Interest on Unfunded Debt (line No. 50) is made up, principally, of interest on money borrowed before the proceeds from the sale of the oil properties were available, and of interest allowed on freight claims.

The decrease of \$68,737.18 in Amortization of Discount on Funded Debt (line No. 51) is the result of the conversion, during the year, of \$17,939,500 of Southern Pacific Company Five Per Cent Twenty-Year Convertible bonds into common stock, and of the retirement of \$1,841,000 of Southern Pacific Equipment Trust certificates maturing during the year, the unextinguished discount thereon having been charged to Profit and Loss.

The decrease of \$570,392.99 in Miscellaneous Income Charges (line No. 53) is the result, principally, of a decrease in the charges to that account for lap-over items of expenses appertaining to the period prior to January 1, 1918.

The dividends paid for 1921 were appropriated from the profit and loss surplus, and therefore do not appear in the income account. They amount to \$20,639,249.82, an increase, compared with dividends paid for 1920, of \$2,429,653.00. This increase is caused by the dividends paid on \$17,939,500 of capital stock issued this year against a like amount of Five Per Cent Convertible bonds retired, and a full year's dividends this year on capital stock issued last year against the retirement of such convertible bonds. The figures for this year include \$54.00 and those for last \$316.00, representing dividends on stocks of Proprietary Companies held by the public.

The Southern Pacific Company does not take into its income the interest on advances made by it for the construction of new railways by companies incorporated in its interest, or for the acquisition of new lines, until the

principal included in the cost of such railways is the amount authorized to be charged to such cost under the accounting regulations of the Interstate Commerce Commission.

On December 31, 1921, the principal of advances to the Southern Pacific Railroad Company of Mexico amounted to \$38,742,150.34. The interest accruing on these advances has not been taken into the income of the Southern Pacific Company.

CAPITAL STOCK

The capital stock of the Southern Pacific Company outstanding at the beginning of the year amounted to..... \$326,441,405.64

Issued during the year:
Common stock issued in exchange for a like amount of
Five Per Cent, Twenty-Year Convertible Gold Bonds
surrendered and cancelled 17,939,560.00

Amount of Southern Pacific Company capital stock outstanding December 31, 1921 \$344,380,905.64

There was no change during the year in the capital stocks

of the Proprietary Companies.

The amounts outstanding December 31,

1921, were as follows:
Preferred stock \$29,400,000.00
Common stock 317,432,400.00 346,832,400.00

Amount of capital stocks of the Southern Pacific Company and of its Proprietary Companies outstanding December 31, 1921 \$691,213,305.64

Held as follows:

In hands of public:
Capital stock of Southern Pacific Company \$344,380,905.64
Capital stock of Proprietary Companies 62,000.00 \$344,443,105.64

Owned by Southern Pacific Company.. \$346,470,200.00
Owned by Proprietary Companies..... 300,000.00 346,770,200.00

..... \$691,213,305.64

FUNDED DEBT

The funded and other fixed interest-bearing debt of the Southern Pacific Company and of its Proprietary Companies outstanding December 31, 1920, was as follows:

Southern Pacific Company \$159,158,160.00
Proprietary Companies 443,157,610.95

Total outstanding December 31, 1920..... \$602,315,770.95

Retired during the year:

SOUTHERN PACIFIC COMPANY

San Francisco Terminal First Mortgage
Four Per Cent. Bonds:
Purchased from payments to sinking fund \$7,000.00

Five Per Cent, Twenty-Year Convertible
Gold Bonds:

Retired in exchange for a like amount of
common stock issued 17,939,500.00

Four and One-half Per Cent. Equipment

Trust Certificates:

Series A, Due March 1,

1921, paid off \$1,012,000.00

Series B, Due September 1,

1921, paid off 201,000.00

Series C, Due December 1,

1921, paid off 117,000.00

Series D, Due May 1, 1921,

paid off 511,000.00

Six Per Cent. Temporary

Equipment Gold Notes,

Due January 15, 1921,

paid off 187,600.00 2,028,600.00

CENTRAL PACIFIC RAILWAY

COMPANY

First refunding Mortgage

Four Per Cent. Bonds:

Purchased from payments

to sinking fund \$34,500.00

Three and One-half Per Cent.

Mortgage Gold Bonds:

Purchased from

proceeds of sale

of lands \$105,000.00

Purchased from

payments to sink-

ing fund 32,500.00 137,500.00

Four Per Cent. Thirty-five

Year European Loan of

1911:

Adjustment account differ-

ence in exchange 7.04 172,007.04

HOUSTON & TEXAS CENTRAL

RAILROAD COMPANY

General Mortgage Four Per

Cent. Bonds, matured:

Redeemed and cancelled... \$42,000.00

Acquired and held alive by

Southern Pacific Company 4,119,000.00 4,161,000.00

Carried forward \$24,308,107.04 \$602,315,770.95

Brought forward \$24,308,107.04 \$602,315,770.95

Retired during the year—Continued:

LOUISIANA WESTERN RAILROAD COMPANY

First Mortgage Six Per Cent. Bonds, ma-

tured 2,240,000.00

SOUTH PACIFIC COAST RAILWAY COMPANY

First Mortgage Four Per Cent. Bonds:

Purchased from payments to sinking fund 262,000.00

SOUTHERN PACIFIC RAILROAD COMPANY

First Refunding Four Per Cent. Gold

Bonds:

Purchased from payments to sinking fund 15,500.00

TEXAS & NEW ORLEANS RAILROAD COMPANY
Payment to State of Texas account of
School Fund Debt

4,695.44

Total retired during the year..... 26,830,302.48

Amount of funded and other fixed interest-bearing debt of the Southern Pacific Company and of its Proprietary Companies outstanding December 31, 1921:

Southern Pacific Company \$139,183,060.00
Proprietary Companies 436,302,408.47 \$575,485,468.47

Held as follows:

In hands of public:

Funded debt of Southern Pacific Com-

pany \$139,183,060.00

Funded debt of Proprietary Companies... 322,181,990.90 \$461,365,050.90

Owned by Southern Pacific Company... \$98,084,417.57

Owned by Proprietary Companies..... 1,359,000.00

Held in sinking funds of Proprietary Companies 14,497,000.00 114,120,417.57

Total \$575,485,468.47

RATIO OF CAPITAL STOCK HELD BY PUBLIC TO FUNDED DEBT
AND TO TOTAL CAPITAL HELD BY PUBLIC

During the five years ended December 31, 1921, the ratio of capital stock of your companies held by the public to the funded debt of your companies held by the public, increased 53.31 per cent; and the ratio of capital stock

to the total capital of your companies held by the public, increased 30.53 per cent, viz:

CAPITAL STOCK AND FUNDED DEBT HELD BY PUBLIC

	December 31, 1921	December 31, 1916	+Increase —Decrease	Per Cent.
Capital stock held by public	\$344,443,105.64	\$272,905,505.64	+\$71,537,600.00	26.21
Funded debt held by public	461,365,050.90	560,398,362.71	— 99,033,311.81	17.67
Total capital held by public	\$805,808,156.54	\$833,303,868.35	—\$27,495,711.81	3.30
Ratio of capital stock to funded debt	74.66	48.70	+	25.96 53.31
Ratio of capital stock to total capital	42.75	32.75	+	10.00 30.53

The increase in capital stock is the result of the issue of \$71,558,000.00 par value, capital stock of Southern Pacific Company against the surrender and cancellation of \$77,709,650.00, par value, Four and Five Per Cent Convertible Bonds, less \$20,400.00, par value, capital stocks of Proprietary Companies acquired by Southern Pacific Company. The decrease in funded debt is the result of the retirement of \$77,709,650.00, par value, Southern Pacific Company Four and Five Per Cent Convertible Bonds against the issue of capital stock, the retirement of \$21,410,881.88, par value, bonds of Southern Pacific Company and its Proprietary Companies redeemed out of general funds of the companies and by sinking funds, and the acquisition by Southern Pacific Company of \$17,726,779.93, par value, bonds of Proprietary Companies, less \$17,814,000.00, par value, Southern Pacific Equipment Trust obligations issued for the acquisition of new equipment.

BALANCE SHEET

SOUTHERN PACIFIC COMPANY AND PROPRIETARY COMPANIES, COMBINED

ASSETS—DECEMBER 31, 1921, COMPARED WITH DECEMBER 31, 1920, EXCLUDING OFFSETTING ACCOUNTS

Assets	December 31, 1921	December 31, 1920	Increase	Decrease
INVESTMENTS				
Investment in road and equipment.....	\$1,055,929,559.56	\$1,023,128,725.51	\$32,800,834.05	.....
Improvements on leased railway property	4,365,285.80	4,307,067.10	58,218.70	.....
Sinking funds	16,669,768.59	15,894,531.86	775,236.73	.....
Deposits in lieu of mortgaged property sold.....	1,556,212.61	14,406,620.76	.....	\$12,850,408.15
Miscellaneous physical property	13,559,989.73	13,785,215.46	.....	225,225.73
Investments in affiliated companies:				
Stocks	282,753,616.78	328,460,971.48	.....	45,707,354.70
Bonds	149,365,499.94	148,424,714.44	940,785.50	.....
Stocks } Cost inseparable	10,728,251.70	11,267,951.70	.....	539,700.00
Bonds }	29,849,498.81	1,551,407.54	28,298,091.27	.....
Notes	121,249,766.21	107,281,536.58	13,968,229.63	.....
Advances				
Other investments:				
Stocks	152,384.04	156,710.29	.....	4,326.25
Bonds	19,041,736.05	9,021,311.91	10,020,424.14	.....
Notes	1,740,538.99	2,032,491.77	.....	291,952.78
Advances	251,410.42	294,019.97	.....	42,609.55
Miscellaneous	251,972.90	2,295,565.08	.....	2,043,592.18
Total	\$1,707,465,492.13	\$1,682,308,841.45	\$25,156,650.68	.....
CURRENT ASSETS				
Cash	\$15,047,421.02	\$16,452,542.35	.....	\$1,405,121.33
Demand loans and deposits	4,044,702.97	.....	\$4,044,702.97	.....
Special deposits	378,993.66	224,119.20	154,874.46	.....
Loans and bills receivable	11,665,085.31	59,268.34	11,605,816.97	.....
Traffic and car-service balances receivable.....	2,468,475.21	6,212,714.73	.....	3,744,239.52
Net balance receivable from agents and conductors	3,517,339.84	5,694,542.13	.....	2,177,202.29
Miscellaneous accounts receivable	9,379,727.57	17,160,402.64	.....	7,780,675.07
Material and supplies	36,039,533.02	40,263,359.08	.....	4,223,826.06
Interest and dividends receivable	2,555,337.97	2,269,418.00	285,919.97	.....
Rents receivable	237,191.62	1,163,745.30	.....	926,553.68
Other current assets.....	372,791.13	481,779.82	.....	108,988.69
Total	\$85,706,599.32	\$89,981,891.59	.....	\$4,275,292.27
ACCOUNTS WITH U. S. RAILROAD ADMINISTRATION				
Standard return	\$103,525,702.26	\$104,532,608.09	.....	\$1,006,905.83
Less received on account	74,125,000.00	74,125,000.00	.....	.....
Balance due	\$29,400,702.26	\$30,407,608.09	.....	\$1,006,905.83
Additional compensation for use of additions and betterments completed during Federal control, cash and agents' and conductors' balances taken over January 1, 1918, revenues prior to January 1, 1918, and other corporate assets collected, etc.....	40,066,865.25	38,005,388.11	\$2,061,477.14	.....
Material and supplies, December 31, 1917	23,543,273.25	23,689,556.32	.....	146,283.07
Depreciation and other reserves	9,786,468.41	9,751,386.36	35,082.05	.....
Road and equipment retired and not replaced	1,594,051.76	1,127,779.00	466,272.76	.....
Total	\$104,391,360.93	\$102,981,717.88	\$1,409,643.05	.....
U. S. GOVERNMENT				
U. S. Government deficit in guaranty income	\$26,120,156.10	\$20,490,427.50	\$5,629,728.60	.....
DEFERRED ASSETS				
Working fund advances	\$233,861.06	\$173,392.66	\$40,468.40	.....
Insurance and other funds .....	.....	16,360.00	.....	\$16,360.00
Other deferred assets	10,352,522.89	8,382,913.27	1,969,609.62	.....
Total	\$10,586,383.95	\$8,592,665.93	\$1,993,718.02	.....
UNADJUSTED DEBITS				
Rents and insurance premiums paid in advance	\$145,197.26	\$202,706.36	.....	\$57,509.10
Discount on capital stock	3,988,600.00	3,988,600.00	.....	.....
Discount of funded debt	1,957,900.33	2,400,820.37	.....	442,920.04
Other unadjusted debits	10,031,362.16	22,343,697.62	.....	12,312,335.46
Securities issued or assumed—Unpledged.....(d)	5,978,425.00	5,985,175.00	.....	6,750.00
Securities issued or assumed—Pledged.....(d)	102,750.00	156,500.00	.....	53,750.00
Total	\$16,123,059.75	\$28,935,824.35	.....	\$12,812,764.60
Total assets	\$1,950,393,052.18	\$1,933,291,368.70	\$17,101,683.48	.....

(a) The value of the unsold Central Pacific Railway Company land-grant lands is not included in the above statement of assets. (d) Excluded from total assets, and a corresponding amount excluded from outstanding funded debt, in accordance with regulations of the Interstate Commerce Commission.

BALANCE SHEET

SOUTHERN PACIFIC COMPANY AND PROPRIETARY COMPANIES, COMBINED
LIABILITIES—DECEMBER 31, 1921, COMPARED WITH DECEMBER 31, 1920, EXCLUDING OFFSETTING ACCOUNTS

	December 31, 1921	December 31, 1920	Increase	Decrease
LIABILITIES				
Stock				
Capital stock of Southern Pacific Company	\$344,380,905.64	\$326,441,405.64	\$17,939,500.00	.....
Capital stock of Proprietary Companies	346,832,400.00	346,832,400.00	.....	.....
Total stock outstanding	\$691,213,305.64	\$673,273,805.64	\$17,939,500.00	.....
Premium on capital stock of Southern Pacific Company	\$6,304,440.00	\$6,304,440.00	.....	.....
Total	\$697,517,745.64	\$679,578,245.64	\$17,939,500.00	.....
LONG TERM DEBT				
Funded debt unmatured:				
Book liability	\$581,556,643.47	\$608,457,445.95	.....	\$26,890,802.48
Less held by or for companies	6,081,175.00	6,141,675.00	.....	60,500.00
Actually outstanding:				
Southern Pacific Company	\$139,183,060.00	\$159,158,160.00	.....	\$19,975,100.00
Proprietary Companies	436,302,408.47	443,157,610.95	.....	6,855,202.48
Total funded debt	\$575,485,468.47	\$602,315,770.95	.....	\$26,830,302.48
Nonnegotiable debt to affiliated companies:				
Open accounts	25,004,008.35	47,792,526.82	.....	22,788,518.47
Total	\$600,489,476.82	\$650,108,297.77	.....	\$49,618,820.95
CURRENT LIABILITIES				
Loans and bills payable .....	.....	\$5,000,000.00	.....	\$5,000,000.00
Traffic and car-service balances payable	\$3,922,967.27	10,112,285.10	.....	6,189,317.83
Audited accounts and wages payable	14,862,407.42	28,517,473.11	.....	13,655,065.69
Miscellaneous accounts payable	1,724,373.58	3,395,273.09	.....	1,670,899.51
Interest matured unpaid	4,349,558.62	4,554,009.33	.....	204,450.71
Dividends matured unpaid	5,254,992.49	4,683,119.58	\$571,872.91	.....
Funded debt matured unpaid	16,213.92	29,213.92	.....	13,000.00
Unmatured interest accrued	4,832,943.21	4,979,378.44	.....	146,435.23
Unmatured rents accrued	308,102.25	294,176.59	13,925.66	.....
Other current liabilities	395,500.99	898,064.18	.....	502,563.19
Total	\$35,667,059.75	\$62,462,993.34	.....	\$26,795,933.59
ACCOUNTS WITH U. S. RAILROAD ADMINISTRATION				
Advances for additions and betterments	\$24,842,214.54	\$25,463,867.72	.....	\$621,653.18
Advances for expenses prior to January 1, 1918, and other corporate liabilities paid, etc.	52,083,896.70	51,166,637.10	\$917,259.60	.....
Agents' and conductors' balances February 29, 1920	477,705.88	594,037.01	.....	116,331.13
Federal material and supplies February 29, 1920	24,212,972.01	24,061,913.39	151,058.62	.....
Total	\$101,616,789.13	\$101,286,455.22	\$330,333.91	.....
DEFERRED LIABILITIES				
Other deferred liabilities	\$88,585.60	\$208,864.09	.....	\$120,278.49
UNADJUSTED CREDITS				
Tax liability	\$5,795,175.25	\$1,878,273.38	\$3,916,901.87	.....
Insurance and casualty reserves	1,877,021.70	3,182,804.69	.....	\$1,305,782.99
Operating reserves	5,619,793.03	4,342,251.64	1,277,541.39	.....
Accrued depreciation—Road	1,643,796.86	1,489,080.76	154,716.10	.....
Accrued depreciation—Equipment	58,205,617.84	54,583,951.21	3,621,666.63	.....
Other unadjusted credits	116,483,389.46	86,553,083.02	29,930,306.44	.....
Total	\$189,624,794.14	\$152,029,444.70	\$37,595,349.44	.....
CORPORATE SURPLUS				
Additions to property through income and surplus	\$1,773,020.11	\$1,575,921.24	\$197,098.87	.....
Funded debt retired through income and surplus	23,795,752.09	23,333,510.55	462,241.54	.....
Sinking fund reserves	12,570,482.63	11,602,666.84	967,815.79	.....
Appropriated surplus not specifically invested	3,818,177.83	3,818,177.83	.....	.....
Total appropriated surplus	\$41,957,432.66	\$40,330,276.46	\$1,627,156.20	.....
Profit and loss—Balance	283,431,168.44	247,286,791.48	36,144,376.96	.....
Total corporate surplus	\$325,388,601.10	\$287,617,067.94	\$37,771,533.16	.....
Total liabilities	\$1,950,393,052.18	\$1,933,291,368.70	\$17,101,683.48	.....

(a) The outstanding capital stock and funded debt include capital stocks and funded debt of Proprietary Companies of the par value of \$346,770,200.00 and \$114,120,417.57, respectively, a total of \$460,890,617.57, which securities are owned by the Southern Pacific Company or by Proprietary Companies, or are held in sinking funds of Proprietary Companies. The cost of these securities is included in the investments shown under "Investments in Affiliated Companies." Of said amount, stocks of the par value of \$249,653,161.00, which stand charged on the books at \$232,932,667.41, are pledged against the issue of Southern Pacific Company stock and bonds. (d) Represents accrued depreciation on electric power plants and substation, general office building at San Francisco, wood preserving works, Sacramento rolling mill, oil storage plants, grain elevators, and similar facilities. (e) Represents, principally interest on construction advances which have not been repaid, as explained in the last paragraph but one under the heading "Income Account."

EQUIPMENT

All the equipment included in Southern Pacific Equipment Trust, Series E, mentioned in last year's report, has been received and placed in service. The tank steamer Tamiahua, also mentioned in last year's report, was completed and placed in service November 22, 1921.

The following new equipment was completed at company shops during the year, or was under construction at company shops at the close of the year:

- 37 locomotives
- 281 freight-train cars
- 3 passenger-train cars
- 86 roadway service cars.

The cost of this equipment will be about \$1,900,000.

THE SUIT INVOLVING THE RIGHT OF THE SOUTHERN PACIFIC COMPANY TO OWN THE STOCK OF THE CENTRAL PACIFIC RAILWAY COMPANY

In last year's report it was stated that this case was, after all argument, submitted in the Supreme Court of the United States on April 19, 1921, and

by the Court taken under advisement. Two members of the Court were found to be disqualified to take part in the decision of the case. After the submission the number of the justices qualified to consider the case was still further reduced by the death of Chief Justice White. The case was then assigned for reargument on April 10, 1922, and was reargued at length. On May 29th a decision was handed down by the Supreme Court to the effect that the common control of the Central Pacific and other Southern Pacific lines, which originated more than half a century ago, was in violation of the Sherman Anti-trust Law of 1890, and the termination of such common control was decreed. As the opinion of the Supreme Court was received on the day this Annual Report was to be placed in the hands of the printer, all that can be said at the present time is that it is believed from the usual procedure in such cases that time and opportunity will be afforded to carry out the decree of the Court with a minimum of injury and loss to the railroads concerned. The fact that the Interstate Commerce Commission is now engaged in regrouping the railroads of the country into a limited number of enlarged systems, under the Transportation Act of 1920, may require a delay until the Commission has determined its plan of consolidation for the railroads in the Western transcontinental region.

CONTROVERSY ARISING OUT OF THE OREGON & CALIFORNIA RAILROAD'S LAND GRANT

This is an accounting suit brought in 1917 by the United States seeking to offset against the compensation of \$2.50 per acre, due the Company for the unsold lands, moneys received by the Company, in excess of \$2.50 per acre, by reason of past sales, leases, and otherwise, as well as taxes levied since the forfeiture decision in 1913 and voluntarily paid by the Federal Government to the State of Oregon. The trial of this case is still going on.

ASSOCIATED PIPE LINE COMPANY

Since the incorporation of the Associated Pipe Line Company, in 1907, the capital stock of that company has been owned one-half by Southern Pacific Company and one-half by Associated Oil Company. The Pipe Line Company owns oil pipe lines running from the Southern California oil fields to various points on Southern Pacific Company's lines, and to tidewater, which have been used jointly by Southern Pacific Fuel Oil Department and by Associated Oil Company. Following the sale of the California oil properties to the Pacific Oil Company, mentioned on page 26 of last year's report, that company opened negotiations looking to the acquisition by it of a one-third interest in the Associated Pipe Line Company. As a result of these negotiations the capital stock of the Pipe Line Company was increased from \$7,000,000 to \$10,500,000, the \$3,500,000 of increased stock being sold to the Pacific Oil Company at par. The retention by your company of a one-third interest in the Pipe Line Company will enable it to obtain the delivery of fuel oil at points on its lines where it will be readily available, at a minimum cost for transportation.

PORTER FUEL COMPANY AND DURANGO LAND COMPANY

As of December 31, 1921, the Southern Pacific Company acquired the entire outstanding capital stock of the Porter Fuel Company and of the Durango Land Company. These companies own about 21,500 acres of high grade bituminous coal lands in southwestern Colorado, and the properties were acquired to provide a source of future fuel supply for your railroads.

SOUTHERN PACIFIC RAILROAD COMPANY OF MEXICO

The value of property damaged or destroyed from the beginning of the Madero revolution in 1910 down to December 31, 1921 (including the estimated cost of restoring the Alamos and Tonichi Branches and the main line from Acaponeta to Tepic, the operation of which it was necessary to abandon in the spring of 1913), now amounts to 11,535,260 pesos equivalent to \$5,767,630.

At December 31, 1921, the company's claims against the Mexican Government on account of revolutionary disturbances, stated in brief, were as follows:

Damage to or destruction of, property as mentioned above.....	11,535,260 pesos
Rental for, and maintenance of, road and equipment while under Government operation.....	9,838,850 "
Freight and passenger transportation furnished on Government orders	5,980,469 "
Materials and supplies furnished to, or confiscated by, various military authorities, telegraph service furnished, and other miscellaneous items.....	520,848 "
In addition to the foregoing claims the company has subvention and interest claims against the Mexican Government as follows:	
Unpaid portion of subvention of 12,500 pesos per kilometer, payable in ten equal annual installments commencing with July, 1912, as provided in the concession under which the company's line was constructed.....	3,591,354 "
Unpaid interest to December 31, 1921, on past due payments of above subvention.....	1,260,678 "
Unpaid interest to December 31, 1921, on Mexican Consolidated Public Debt bonds owned by the company.....	112,813 "
Total claims against Mexican Government.....	32,840,272 pesos
Equivalent, in U. S. currency, to.....	\$16,420,136

Of the foregoing claims, amounting to 32,840,272 pesos, claims to the amount of 26,268,121 pesos have been filed with the proper departments of the Mexican Government, and the remainder will be filed as rapidly as the congested condition of the departments will permit. Since the inauguration of President Obregon, on December 1, 1920, payments aggregating 675,851 pesos have been made on account of these claims, while claims to the amount of 3,428,407 pesos have been approved for payment but have not yet been paid.

The average miles of road operated during the year was 1,054.70 miles as compared with 1,001.47 miles for 1920. Only such maintenance work has been carried on, however, as was found necessary for the operation of trains over those portions of the line open for traffic.

STATUS OF ACCOUNTS WITH U. S. RAILROAD ADMINISTRATION

The status of the accounts of your company and its Proprietary Companies with the U. S. Railroad Administration, incident to the period of Federal operations, as booked to December 31, 1921, is shown in the combined balance sheet. The accounts as stated, however, do not include any charge either on account of under-maintenance during the period of Federal operations, or on account of the deficiency in material and supplies returned by the Director General at the end of Federal control.

Your company's claim for under-maintenance was filed on August 26, 1921; and a general claim, covering the balance due your company on all accounts with the U. S. Railroad Administration, including claims for under-maintenance and for deficiency in material and supplies, was filed September 19, 1921.

The U. S. Railroad Administration has completed its investigation of all items in your company's claim except the item of under-maintenance and the item of material and supplies. Administration engineers and accountants have been investigating these two items for several months, and it is hoped that they will complete their investigation in the near future.

[ADVERTISEMENT]

STATUS OF ACCOUNT WITH U. S. GOVERNMENT UNDER ITS GUARANTY

As stated in last year's report, the Interstate Commerce Commission, on October 18, 1920, issued an order requiring each carrier which had accepted the guaranty offered by the Government, to file a statement showing the amount due the carrier under the Government's guaranty as computed by the carrier. On April 25, 1921, your company filed a statement in accordance with such order and subsequently received partial payments, aggregating \$5,891,000, pending a complete review of the claim by the Commission.

On December 15, 1921, the Commission issued an order prescribing formulae for computing the maintenance allowance to be included in operating expenses for the guaranty period, fixing December 31, 1921, as the time as of which all accounts pertaining to the guaranty period should be closed, and requiring each carrier to file with the Commission a final claim covering the amount due from the Government under its guaranty. Final claim of your company, compiled in accordance with this order, was filed on March 24, 1922, and it is hoped that an early settlement will be obtained.

FEDERAL VALUATION OF RAILROADS

The Act of Congress, known as the Federal Valuation Act, approved March 1, 1913, directs the Interstate Commerce Commission to determine the value of the transportation properties of each railway corporation in the United States engaged in interstate commerce and subject to the Interstate Commerce Act.

In connection with the valuation of any property, the Act directs the Commission, among other things, to ascertain the original cost of such property to date of valuation, cost of reproduction new, cost of reproduction new less depreciation, present value of lands, present cost of acquiring lands, through condemnation proceedings or by purchase, in excess of present value, and numerous other facts set out in the statute and assumed to have a bearing upon the question of valuation. The Act also directs the Commission, in making such valuation, to take into account any and all elements of value which may be found to exist.

Upon the completion of the valuation of any property the Commission is further directed to prepare, and serve upon the owning carrier, a tentative valuation wherein shall be set forth the value placed upon such property by the Commission, together with the Commission's findings of fact concerning the matters hereinbefore enumerated. This tentative valuation is thereafter subject to protest by the carrier, in which event provision is made for formal hearing and determination.

Immediately upon the passage of this Act a valuation organization was perfected for your company, and this organization has actively co-operated with the field organization of the Commission in the preparation of a complete field inventory of all the transportation properties of your company. In addition to this work, the valuation organization of your company, in anticipation of the receipt of the Commission's tentative valuation, has prepared a complete schedule of unit prices for application to the inventory, for purpose of comparison with the unit prices fixed by the Commission's Bureau of Valuation, and to serve as the basis of any protest thereto which may be necessary to the protection of the company's interest. For these purposes your companies have expended to December 31, 1921, the sum of \$3,213,354.42, of which the sum of \$628,330.19 was expended during the current year.

By reason of the enormity of the task involved, the Interstate Commerce Commission has not yet fixed a final value upon the properties of any railroad company of substantial size. The work, however, is now rapidly drawing to a conclusion, and it is anticipated that tentative valuations covering the properties of your company may be expected within the not distant future.

The importance of valuation work has been enhanced by the provisions of the Transportation Act, under which the basis of rates in the several rate groups, established by the Commission, is dependent upon the aggregate value of all properties therein, as found by the Commission, which valuations, as thus found, also govern the capitalization of any consolidated companies which may be created under the provisions of the Transportation Act.

PURCHASE OF SOUTHERN PACIFIC COMPANY CAPITAL STOCK FOR EMPLOYEES

In December, 1921, the Executive Committee approved a plan extending to all employees of Southern Pacific Transportation System lines the privilege of purchasing, through your company, a limited amount of its capital stock, paying therefor in monthly installments, the company advancing the funds required to purchase the stock. Under this plan, which became effective February 1, 1922, an employ may purchase from time to time, from one to fifteen shares of stock, paying therefor the sum of \$5.00 per month for each share purchased. Additional shares may be purchased upon the same terms, provided, however, that in no event will the company, at any one time, carry more than fifteen shares in the aggregate for any one employee.

The company, at the request of an employee, purchases the required amount of stock at the current market price on the New York Stock Exchange, making no charge, however, for its services. Pending repayment of the advances made for its purchase the stock is held by a trustee as security for such advances, the account of the employee, in the meantime, being charged with interest at the rate of six per cent. per annum on deferred payments, and credited with the dividends accruing on the stock held for his account. When advances for the purchase of the stock have been fully repaid, the stock will be registered in the employee's name and a certificate therefor delivered to him.

At the close of business May 1, 1922, six hundred and eighty-five employees had subscribed for an aggregate of 2,428 shares under this plan.

GENERAL

Dividends on the capital stock of your company were declared during the year, payable as follows:

1½ per cent. paid April 1, 1921.....	\$5,142,198.99
1½ per cent. paid July 1, 1921.....	5,165,569.67
1½ per cent. paid October 1, 1921.....	5,165,713.58
1½ per cent. payable January 3, 1922.....	5,165,713.58

Total \$20,639,195.82

Your Board announces with sorrow the death, on August 22, 1921, of Colonel Epes Randolph, President of the Arizona Eastern Railroad Company, and of the Southern Pacific Railroad Company of Mexico, who, for twenty-six years, served your companies with conspicuous ability and unwavering fidelity. The Board has caused to be entered in the minutes of its meetings a resolution reciting Colonel Randolph's long, faithful, and efficient service.

Under the pension system put into effect January 1, 1903, there were carried on the pension rolls at the end of the year 1,072 employees. The payments to pensioners for the year amounted to \$513,867.62, which is equivalent to six per cent. per annum on an investment of \$8,564,000.00.

By order of the Board of Directors,

JULIUS KRUTTSCHNITT,

Chairman of the Executive Committee.

(Continued from page 1360)

Section 204:	
Nevada-California-Oregon Railway	\$50,016
Section 209:	
Bridgton & Saco River Railroad	2,996
Bullfrog Goldfield Railroad	14,455
Chicago, Milwaukee & St. Paul	676,636
Georgia Northern	1,632
Mississippi Central	38,581
Philadelphia & Reading	1,656,061
Texas Midland	58,368
Tonopah & Goldfield	16,683
Woodstock Railway	7,123
Section 210:	
Chesapeake & Ohio	1,334,500
Cisco & Northeastern	27,863
Evansville, Indianapolis & Terre Haute	50,000
New York, New Haven & Hartford	2,600,000
Section 212:	
Chicago, Peoria & St. Louis, receivers	55,000
Total	\$6,589,914
Total payments to May 31, 1922.	
(a) Under Section 204, as amended by Section 212 for reimbursement of deficits during federal control:	
(1) Final payments, including partial payments previously made	\$1,637,550
(2) Partial payments to carriers as to which a certificate for final payment has not been received by the Treasury from the Interstate Commerce Commission	1,684,195
Total payments account reimbursement of deficits.	\$3,321,745
(b) Under Section 209, as amended by Section 212 for guaranty in respect to railway operating income for first six months after federal control:	
(1) Final payments, including advances and partial payments previously made	\$42,807,749
(2) Advances to carriers as to which a certificate for final payment has not been received by the Treasury from the Interstate Commerce Commission	239,365,672
(3) Partial payments to carriers as to which a certificate for final payment has not been received, as stated above	153,647,795
Total payments account of said guaranty	435,821,216
(c) Under Section 210, for loans from the revolving fund of \$300,000,000 therein provided	307,091,080
Total	\$746,234,041
Repayments to the loan fund amount to \$74,750,355.	

Dividends Declared

Albany & Susquehanna.—\$4.50, semi-annually, payable July 1 to holders of record June 15.
 Atchison, Topeka & Santa Fe.—Preferred, 2½ per cent, semi-annually, payable August 1 to holders of record June 30.
 Lehigh Valley.—Common, 1¾ per cent, quarterly; preferred, 2½ per cent, quarterly; both payable July 1 to holders of record June 17.
 New York, Chicago & St. Louis.—Common, 2½ per cent, payable June 30 to holders of record June 19; 2nd preferred, three quarterly dividends of 1¾ per cent, payable June 30, September 30 and December 30, to holders of record June 19, September 19 and December 19, respectively.
 St. Louis, Rocky Mountain & Pacific.—Common, 1 per cent, quarterly; preferred, 1½ per cent, quarterly; both payable June 30 to holders of record June 17.

Trend of Railway Stock and Bonds Prices

	June 3	Last Week	Last Year
Average price of 20 representative railway stocks	65.01	67.22	54.41
Average price of 20 representative railway bonds	86.06	86.28	73.86

BAGGAGE INSURANCE POLICIES are now offered by the Canadian Pacific. These policies are particularly designed for Atlantic and Pacific steamship traffic and cover all risks of transportation and navigation, except while in the permanent residence of the assured.

REDUCTION OF TAXES is demanded in a suit brought by the New York Central in Supreme Court at New York City on the ground that the property has been assessed this year at \$149,366,150, whereas the real value is only \$135,937,320, and assessments against other New York City realty average only 90 per cent of the actual value. The petition says the railroad has been taxed for tunnel support under public parks and thoroughfares where there should be no tax, and for footbridges constructed for the benefit of the owners of adjacent property.

Railway Officers

Executive

A. B. Ramsdell, who has been promoted to assistant vice-president of the Chicago, Rock Island & Pacific in charge of labor matters, was born at Tama, Iowa, on October 3, 1873,



A. B. Ramsdell

and entered railway service on July 1, 1891, as a clerk in the auditing department of the Chicago, Rock Island & Pacific. He was a clerk in this and the passenger department until March 15, 1893, when he became chief clerk to the superintendent of the Chicago Terminal. He was appointed trainmaster of the Chicago Terminal on February 15, 1904, and held this position at Chicago until May 1, 1906, when he was transferred to the Colorado division, where he remained until December 1, 1906, when he was transferred to the Iowa division. On January 1, 1909, he was transferred to the Illinois division, where he remained until December 15, 1909, when he was promoted to superintendent of the Chicago Terminal division. Consecutively from that time he served as superintendent of the Chicago Terminal division from February 1, 1912, to January 8, 1913; as superintendent of the Kansas division during the following year; and as superintendent of the Illinois division from June 1, 1914, to May 31, 1916, when he was promoted to assistant general manager of the First district with headquarters at Des Moines, Iowa. He was appointed assistant to the vice-president and general manager on April 1, 1919, and held this position until the time of his recent promotion to the newly created position of assistant vice-president in charge of labor.

A. E. Wallace, manager of the Chicago region of the Erie, with headquarters at Chicago, has been appointed general manager of the Minneapolis, St. Paul & Sault Ste. Marie,



A. E. Wallace

with headquarters at Minneapolis, Minn., effective June 1, to succeed G. R. Huntington. Mr. Wallace was born at Nashua, N. H., on March 2, 1879, and was educated at Harvard University, from which he was graduated with the degree of bachelor in arts in 1902. He entered railway service in November of the same year as a clerk on the Great Northern at Larimore, N. D., and remained at that point as a clerk and timekeeper until January, 1904, when he entered the employ of the Chicago, Rock Island & Pacific as yard clerk. He served in the consecutive capacities of yard clerk, timekeeper and chief clerk on the Rock Island until January, 1907, when he entered the service of the Chicago, Burlington & Quincy, with which he was employed

consecutively as special inspector, assistant extra gang foreman, foreman, assistant roadmaster and trainmaster until February, 1911. Thereafter he was special inspector from February, 1911, to September of the same year, and a member of the staff of the second vice-president and, later, assistant superintendent from September, 1911, until July, 1912, when he re-entered the service of the Chicago, Rock Island & Pacific as superintendent. He became connected with the Erie in January, 1918, as general superintendent with headquarters at Chicago and held this position until June, 1918, when he was transferred to Youngstown, Ohio, as assistant general superintendent and continued as assistant general superintendent until March, 1920, when he was promoted to manager of the Chicago region, the position he held at the time of his recent appointment on the Minneapolis, St. Paul & Sault Ste. Marie.

John C. Sesser has been appointed assistant vice-president of the Cuba Railroad with headquarters at Camaguey, Cuba.

C. S. Lake, assistant to the president of the Chesapeake & Ohio, with headquarters at Richmond, Va., has been appointed assistant to the president of the St. Louis Southwestern, with headquarters at St. Louis, Mo., and with jurisdiction over all departments, effective June 5.

B. L. Winchell, long a railway executive and under the Railroad Administration regional director of the Southern region, has been elected president of the Remington Typewriter Company. Mr. Winchell began his railroad career in July, 1874, as a clerk in the office of the superintendent of machinery of the Hannibal & St. Joseph (now a part of the C., B. & Q.). In 1875 he was transferred to the auditor's office of the same road and remained there until November, 1877, when he was promoted to chief clerk in the general freight and ticket office. In 1879 he was appointed assistant general passenger agent of the Atchison & Nebraska (now a part of the C., B. & Q.). From



B. L. Winchell

April 1 to June 1 he was assistant chief clerk in the general passenger department of the Kansas City, Fort Scott & Gulf (now a part of the Frisco) and the Kansas City, Lawrence & Southern Kansas (now a part of the A., T. & S. F.). He was then promoted to assistant general passenger agent of those roads. In May, 1895, he became general passenger agent of the Union Pacific, Denver & Gulf (now the C. & S.). From May 1 to December 1, 1898, he served the St. Louis-San Francisco in the same capacity and was then elected vice-president of the Colorado & Southern. On October 15, 1900, he was elected president and general manager of the Kansas City, Fort Scott & Memphis (Frisco). In 1902 he returned to the St. Louis-San Francisco as vice-president and general manager. He became first vice-president in October, 1903, and from then until April 5, 1904, he also served as third vice-president of the Chicago, Rock Island & Pacific and vice-president of the Chicago & Eastern Illinois and the Evansville & Terre Haute (now a part of the C. & E. I.). He was then elected president of the Chicago, Rock Island & Pacific and served in that capacity until December 1, 1909, when he returned to the St. Louis-San Francisco and the Chicago & Eastern Illinois as president, remaining as such until 1913 when he became one of the receivers of the St. Louis-San Francisco. Shortly thereafter he resigned to become director of traffic of the Union Pacific. During the period of federal control he served as director of the Southern region and thereafter was elected vice-president of the Pierce Oil Corporation in charge of the railroad department.

Financial, Legal and Accounting

Wallace T. Hughes, whose election to the newly created position of general attorney of the Chicago, Rock Island & Pacific, with headquarters at Chicago, effective June 1, was reported in the *Railway Age* of June 3 (page 1317), was born in Kentucky in 1877 and studied law at the University of Louisville. Following the completion of his law studies he engaged in publication work as an associate editor of the *Louisville Courier-Journal* until 1909, when he entered the law department of the Chicago, Rock Island & Pacific, specializing in questions relating to federal regulation. After serving in this capacity until 1919 he returned to Louisville, Ky., to become vice-president and associate publisher of the *Courier-Journal* and its afternoon subsidiary, the *Times*, in which occupation he was engaged until June 1, 1922, when he reentered railway service in the newly created position of general attorney of the Chicago, Rock Island & Pacific, in which capacity he will devote special attention to interstate commerce matters.



W. T. Hughes

H. B. Dike, general counsel of the Minneapolis, St. Paul & Sault Ste. Marie with headquarters at Minneapolis, Minn., retired from active service on June 1 after 35 years in the continuous employ of that road and is succeeded by **Henry S. Mitchell**, assistant general counsel. Mr. Dike was born in Wales, on November 20, 1847, and received his law education by private study. He entered railway service in 1887 as Wisconsin attorney for the Minneapolis, St. Paul & Sault Ste. Marie and continued in this capacity until May, 1894, when he was promoted to assistant general solicitor. He was advanced to general solicitor in March, 1908, and in October, 1912, was appointed assistant to the president, holding this position until January 1, 1918, when he became general solicitor in charge of the law department under the United States Railroad Administration. He was elected general counsel on March 1, 1920, following the period of federal control and, while intending for some time to retire, continued to represent the road in this capacity until June 1 of his 75th year, as noted above.



H. B. Dike

W. R. Kettering, office engineer of the Chicago & North Western at Chicago, has been promoted to auditor of capital expenditures, with the same headquarters, effective June 1, to succeed A. F. Morris, deceased. Mr. Kettering was born in DeWitt, Iowa, in 1880, and was graduated from Cornell College, Iowa, in 1902, after which he entered railway service as an instrumentman in the track elevation department of the Chicago & North Western. He was promoted to division engineer on construction in 1907 and from 1908 to 1911 served as division engineer on the construction of the passenger

terminal in Chicago. Thereafter he served in the maintenance department at Boone, Iowa, and later in various capacities in the valuation department until the period of federal control in 1918, when for a year he was assistant in the office of the corporate engineer. Following the termination of federal control in 1920 he was appointed office engineer, which position he held until the time of his recent promotion.

L. Albert Harkness, whose promotion to general auditor of the Illinois Central, with headquarters at Chicago, effective May 15, was reported in the *Railway Age* of June 3



L. A. Harkness

(page 1317), was born in London, England, on November 22, 1874, and entered railway service in September, 1891, as a messenger on the Illinois Central. Thereafter he served consecutively as messenger, clerk, statistician and chief clerk in the office of the vice-president in charge of accounting, with headquarters at Chicago, until July, 1912, when he left the service of the Illinois Central to become assistant auditor of the Insular government of Porto Rico, with headquarters at San Juan. After engaging in this work for two years, he re-entered the service of the Illinois Central at Chicago in May, 1914, as assistant to the comptroller, and continued in this position and later as assistant comptroller until June, 1918, when he was promoted to comptroller for the corporation during federal control. Following the termination of federal control on March 1, 1920, he assumed the duties of assistant to the vice-president and continued in this service until the time of his recent promotion.

G. J. Bunting, whose appointment as comptroller of the Illinois Central with headquarters at Chicago, effective May 15, was reported in the *Railway Age* of June 3 (page 1317),



G. J. Bunting

was born at Portsmouth, Va., July 14, 1881, and entered railway service in 1900 as general accountant for the Cashie & Chowan, in North Carolina, a position which he later relinquished to become associated in an accounting capacity consecutively with the Audit Company of New York and the Indiana Audit Company, in which service he remained until May, 1909, when he was appointed examiner of accounts for the Interstate Commerce Commission. He re-entered railway service on July 15, 1911, as general accountant for the Chicago, Milwaukee & St. Paul, with headquarters at Chicago, a position which he held until March 15, 1913, when he was promoted to assistant general auditor. He left the service of this road on November 1, 1920, to become assistant director of the Bureau of Finance of the Interstate Commerce Commission, in which capacity he was engaged in effecting settlements between the carriers and the government for the guaranty period until May 15 of the current year, when he resigned to become comptroller of the Illinois Central as noted above.

Operating

T. R. Tompkins has been appointed supervising agent of the Michigan Central with headquarters in the general superintendent's office at Detroit, Mich., effective May 20.

O. H. Frick, whose promotion to superintendent of the LaCrosse division of the Chicago, Milwaukee & St. Paul, with headquarters at Portage, Wis., effective May 1, was reported in the *Railway Age* of May 6 (page 1046), was born at Manitowoc, Wis., on September 25, 1879, and was graduated from the University of Wisconsin in 1902. He started his railway career the same year as a levelman on the Louisville & Nashville, and a short time later became an assistant engineer for the Chicago, Rock Island & Pacific, which position he held until 1904, when he became resident engineer for the Missouri, Oklahoma & Gulf. Leaving this position in September, 1904, he was employed for two months as resident engineer for the Apalachicola Northern and thereafter entered the service of the Chicago, Milwaukee & St. Paul, serving continuously with the road in the consecutive capacities of assistant engineer, pilot engineer and field engineer on valuation work until April, 1919, when he was promoted to district engineer, with headquarters at Milwaukee, Wis., the position he held at the time of his recent promotion.

Traffic

F. E. Pennington has been appointed traveling passenger agent of the Missouri Pacific at Birmingham, Ala.

W. Ray Wilson has been promoted commercial agent of the Gulf Coast Lines, with headquarters at Pittsburgh, Pa., effective May 15, to succeed L. B. Williams, resigned.

J. R. Chisman has been promoted to general agent of the Nashville, Chattanooga & St. Louis, with headquarters at Memphis, Tenn., effective June 1.

J. M. Mallory, industrial agent of the Central of Georgia, will henceforth be designated as general industrial agent and **J. F. Jackson**, agricultural agent, will henceforth be general agricultural agent.

H. J. Earley has been appointed assistant general freight agent of the Denver & Rio Grande Western with headquarters at Denver, Colo., with charge over the issuance of tariffs, division sheets and the quotation of rates.

John V. Mahon, has been promoted to general agent of the Chicago, Minneapolis & Omaha, with headquarters at Duluth, Minn., effective May 16, to succeed **T. J. Kenniff**, promoted to assistant general freight agent.

Arthur W. Large, chief clerk to the agricultural agent of the Chicago, Rock Island & Pacific, has been promoted to agricultural agent, with headquarters at Chicago, effective June 1, to succeed Alexander Jackson, deceased.

B. W. Herrman, general freight agent of the Norfolk & Western with headquarters at Roanoke, Va., has been appointed assistant freight traffic manager with the same headquarters. **G. F. Butler** succeeds him as general freight agent. **O. W. Cox**, division freight agent at Roanoke, has been appointed coal freight agent, succeeding **W. A. Huse**, who has been appointed assistant general freight agent. **F. H. Pitman** succeeds Mr. Cox as division freight agent. **J. H. Wilson** has been appointed assistant general freight agent with headquarters at Roanoke and **G. C. Vanzandt** to a similar position at Cincinnati, Ohio. **F. W. Jones** has been appointed general agent at Cincinnati. **S. F. Thacker** has been appointed commercial agent at Bristol, Tenn.

Ira S. Auch, whose appointment as assistant general freight agent of the Lehigh Valley, with headquarters at Buffalo, N. Y., was announced in the *Railway Age* of May 27, page 1263, was born at Chalfont, Pa., on May 24, 1881. He entered railway service with the Philadelphia & Reading as a clerk in the freight claim department in 1899 and in 1902 was promoted to rate clerk in the general freight office of the same company. In 1906 he went with the Lehigh Valley as soliciting agent at Philadelphia. In 1909 he returned to the

Philadelphia & Reading as assistant chief clerk in the general freight office where he remained until 1913, when he was appointed general agent of the Erie at Philadelphia. He served there until the closing of the office in 1918, when he was transferred to the Erie headquarters at New York and remained there until January, 1920, when he went to Bethlehem, Pa., to organize the Nazareth Traffic Bureau. On March 1, 1920, he was appointed district freight agent of the Lehigh Valley and remained in that position until the time of his recent promotion.

Harry A. Mintz, whose promotion to assistant general freight agent on the Chicago, St. Paul, Minneapolis & Omaha, with headquarters at St. Paul, Minn., to succeed L. A. Mitzner, was reported in the *Railway Age* of June 3 (page 1317), was born in St. Paul, Minn., in 1889, and entered railway service on October 1, 1908, as an employee in the tariff bureau of the Chicago, St. Paul, Minneapolis & Omaha, in which department he served in various capacities until his recent promotion.

T. J. Kenniff, whose promotion to assistant general freight agent of the Chicago, St. Paul, Minneapolis & Omaha, with headquarters at St. Paul, Minn., was reported in the *Railway Age* of June 3 (page 1317), was born in Marquette, Mich., on February 16, 1883, and was educated at the Wisconsin Normal College, which he left in 1903. After spending some time on railway construction work in the employ of contractors, he entered railway service in 1901 as an employee on the Lexington-Jefferson City branch of the Missouri Pacific, where he served for a year, when he was transferred to the White river line of that road. He entered the service of the St. Louis-San Francisco in 1902 and worked with that road at St. Louis and later at Memphis until 1905, when he was engaged on the construction of the Emporia-Ottawa cutoff of the Santa Fe for a year. He left railway service in 1906 to spend a year in irrigation work on the Platte river in Nebraska and Wyoming, following which he re-entered railway service as an engineering assistant on the Western Pacific in Nevada. He became connected with the Chicago, St. Paul, Minneapolis & Omaha in 1908 as a clerk and served continuously on that road in the consecutive capacities of clerk, agent, soliciting freight agent, commercial agent and general agent until his recent promotion.

Mechanical

F. C. Simpson, master mechanic of the Southern with headquarters at Bristol, Va., has been transferred in a similar capacity to Knoxville, Tenn. **M. D. Stewart** succeeds Mr. Simpson at Bristol.

J. P. Roquemore, acting superintendent of motive power of the International & Great Northern since May 9, and prior to that mechanical engineer of the same company, was on May 30 appointed superintendent of motive power. **L. E. Temple** has been appointed mechanical engineer.

Engineering, Maintenance of Way and Signaling

H. A. Israel, assistant engineer of the Missouri Pacific, with headquarters at St. Louis, Mo., has been promoted to division engineer of the Kansas City Terminal division, with headquarters at Kansas City, to succeed C. A. Hewes.

H. Copperthwaite, assistant supervisor of signals of the Central of New Jersey, with headquarters at Elizabeth, N. J., has been promoted to supervisor of signals, with headquarters at Long Branch, N. J., effective May 24, to succeed **F. A. Rooney**, transferred to Phillipsburg, N. J., to succeed **J. F. Jacobs**, deceased.

Purchasing and Stores

B. W. Griffith has been appointed general storekeeper of the Michigan Central with headquarters at Detroit, Mich., succeeding **G. T. Dunn**, resigned.

C. R. Painter has been appointed assistant to the general purchasing agent of the New York, New Haven & Hartford with headquarters at New Haven, Conn., succeeding **B. L. Northam**, resigned.

Obituary

E. F. Needham, formerly superintendent of motive power of the Wabash, whose death on May 18 in Boston, Mass., was reported in the *Railway Age* of May 27 (page 1264), was

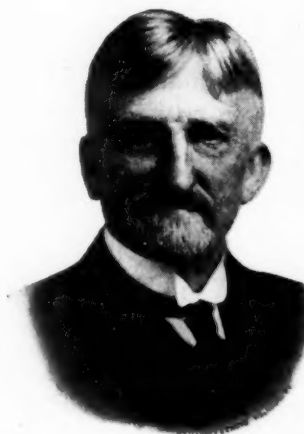


E. F. Needham

born at Batavia, Ohio, on December 25, 1864, and entered railway service in 1880 as a repair track laborer on the Wabash at Butler, Ind. Shortly thereafter he became a boilermaker's apprentice at the Fort Wayne, Ind., shops, and at the conclusion of his apprenticeship in 1894, was promoted to foreman of the boiler shops at Fort Wayne. He was transferred to Springfield, Ill., as boiler foreman in January, 1899, was advanced to assistant master mechanic with headquarters at Decatur, Ill., on

December, 1901, and held this position at Decatur and, after April, 1902, at Ashley, Ind., until October, 1902, when he was promoted to master mechanic with headquarters at Fort Wayne, Ind., having supervision over the Detroit, Peru and Buffalo divisions. He was transferred to Springfield, Ill., as master mechanic in charge of the Decatur and Springfield divisions in March, 1906, and on September 1, 1907, became superintendent of motive power, a position he held until June 1, 1920, when he resigned on account of ill health.

William C. Edes, ex-chairman and former chief engineer of the Alaska Railroad Commission, died on a train near Merced, Cal., May 25, at the age of 65 years. Mr. Edes was born at Bolton, Mass., on Jan. 14, 1856, and was educated at the Massachusetts Institute of Technology, from which he was graduated in civil engineering in 1875. He entered railway service three years later as a member of a railway location party on the Southern Pacific and continued in the employ of this company in various engineering capacities in Arizona, New Mexico and Texas until 1882, when he entered in private practice in Massachusetts. He re-entered railway service in 1886 as assistant en-



Wm. C. Edes

gineer on location and construction for the Southern Pacific and continued in that work for 10 years, during which time he had charge of the construction of a portion of the Oregon & California. He became chief assistant engineer of the San Francisco & San Joaquin Valley in 1896, and in 1901 re-entered the service of the Southern Pacific as assistant engineer, where he was engaged in locating new lines and supervising the reconstruction of other lines, including the Central Pacific from Rocklin, Cal., to Truckee, until 1905, when he became district engineer maintenance of way, with headquarters at San Francisco. A year later he was appointed chief engineer of the Northwestern Pacific. In May, 1914, he was appointed chairman and chief engineer of the Alaskan Engineering Commission. In 1919, he assumed the title of consulting engineer, a position he relinquished in March, 1920, to engage in private consulting work.